The One Thing You Need to Get Right to Prevent Heart Disease

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(How to avoid dying from the leading cause of death)

Estimated reading time: 25 minutes.

Atherosclerotic cardiovascular disease (herein “heart disease”) is the number one cause of death in the U.S. and worldwide. About 1/3 of all humans die from it. More women die from heart disease each year, than all forms of cancer combined. On average someone in the U.S. dies of heart disease every 34 seconds.[1]

But what if you could take a relatively safe and well-studied medication[2] that would reduce your risk of dying from heart disease by 93% or more? Would you take it?

I have learned a lot the last ten years dealing with my wife’s and my stubbornly high cholesterol. I thought the information I learned could benefit others. It is a complex topic, but the steps needed to protect yourself from heart disease are clear and easy to implement. Note: the information in this blog was reviewed for accuracy with a member of the American College of Cardiology.

If you are not a details person, you can skip to the “What should I do first?” section at the end.

Here is what I will cover:

1. What causes heart disease and heart attacks?
2. What causes atherosclerosis?
3. What blood test is the best predictor of heart disease?
4. What is the ideal cholesterol level?
5. Can heart disease be reversed?
6. I am young, so can’t I wait until I am in my 60s or 70s to deal with this?
7. How much can I reduce my risk of heart disease by lowering my cholesterol?
8. Are there tests that measure the amount of plaque in my arteries?
9. What is lp(a) and why should I care?
10. Am I safe if my 10-year risk is low?
11. I thought LDL caused heart disease – so why are those other factors important?

What causes heart disease and heart attacks?

Heart disease is caused by a fatty plaque buildup in the walls of the arteries, which is called atherosclerosis. This atherosclerotic plaque is made mostly of cholesterol, fatty substances, and calcium. Atherosclerosis is a slow, lifelong progression of changes in your arteries that starts in childhood and get worse faster as you age.

When a piece of plaque breaks off it can travel through the bloodstream until it gets stuck and cuts off blood flow. A plaque can also rupture and clot, which restricts blood flow. Atherosclerosis can affect arteries anywhere in the body. Blocked arteries to the heart cause heart attacks. Blocked arteries to the brain cause strokes and vascular dementia.

What causes atherosclerosis?

Atherosclerosis is caused by LDL and other cholesterol particles getting trapped in the walls of your arteries.[3] This causes inflammation and damage to the artery walls.

The latest guidelines state, “LDL is unequivocally recognized as the principal driving force in the development of atherosclerotic cardiovascular disease and its major clinical [consequences]”.[4] High LDL cholesterol is the only prerequisite for heart disease. Not everyone with high LDL will get heart disease. But no one without high LDL, for a prolonged period, will get it.

What blood test is the best predictor of heart disease?

Researchers used to think the ratio of HDL to LDL was the most important metric, but newer research shows that neither HDL nor the ratio of HDL to LDL is what we should be trying to modify.[5] The best predictors of your risk of heart disease are LDL, non-HDL (total cholesterol minus HDL), and ApoB (a protein found on cholesterol-carrying particles).[6] ApoB is the most accurate way to determine your risk of heart disease,[7] but to keep things simpler, I refer only to LDL in this blog.

What is the ideal cholesterol level?

Babies are born with LDL of 20-40 mg/dL[8] (all cholesterol numbers in this blog are in mg/dL except for lp(a) reported in nmol/L).[9] At this level, you are unlikely to develop plaque in your arteries. As LDL increases, the risk of atherosclerosis increases in a dose-dependent manner.[10] The higher your LDL, the higher your lifetime risk of heart disease. For many people, high LDL is due to a poor diet of ultra-processed foods that are high in saturated fat, added sugar, added salt, and refined grains.

LDL goals for those at very high risk of heart disease, high risk, and moderate risk are 55, 70, and 100, respectively.[11] In the U.S., about 26% of adults have LDL above 130.[12] This is why heart disease continues to be the leading killer. Americans are not taking the necessary steps to lower their cholesterol. [See endnote 13 for a comparison of the LDL, non-HDL, and ApoB targets.[13]]

Can heart disease be reversed?

Yes, studies have consistently shown that you halt the progression of plaque when LDL reaches 70.[14] LDL below 70 will cause plaque to regress in most people.[15] And the lower your LDL (down to at least 36) the more your plaque shrinks.[16]

I am young, so can't I wait until I am in my 60s or 70s to deal with this?

Time is an important variable when it comes to cholesterol and heart disease. The longer you have high LDL, the greater your risk of heart disease. And if you reduce your LDL, the longer you maintain it, the greater your reduction in risk.[17]

The plaque that causes heart disease begins to accumulate in early childhood. A 1953 study looked at autopsies of young soldiers killed in the Korean war, with an average age of 24. Over 70% had atherosclerosis in their coronary arteries.[18] Another study found that over 50% of children aged 10-14 killed in car accidents had evidence of early atherosclerotic heart disease.[19]

The American Heart Association (AHA) and American College of Cardiology recommend primary prevention of heart disease begin as early as age 10 and should focus on promoting heart-healthy behaviors (discussed below) and preventing (as opposed to treating) abnormal risk factors.[20]

If you don't pay attention to your LDL now, by the time you have clear symptoms it may be too late. About 50% of men will have a cardiac event before the age of 65, and 25% of those are in men younger than 54.[21]

Women have about the same risk of heart disease as men, but on average they get it about six and a half years later.[22] About a third of women will have their first cardiac event before age 65.[23]

It is never too late to benefit from improving your heart health, but the earlier you start, the better.

How much can I reduce my risk of heart disease by lowering my cholesterol?

Each 38.67 reduction in LDL reduces the relative risk of heart disease events by about 10% during

the first year of treatment, by about 16% after two years, and by about 20% after three years of treatment. Each subsequent year of treatment is expected to further reduce heart disease events by 1.5%. So, five years of treatment should reduce the relative risk of heart disease by about 20-25% (per 38.67 reduction in LDL), and 40 years of treatment (or approximately 40 years of exposure to the lower LDL) would be expected to reduce heart disease events by about 50-55%.

Assume you have LDL of 271. If you reduce your LDL to 136 for five years, then you can expect to reduce your risk of heart disease by 58%. But if you maintain your reduced LDL for 10, 20, 30, or 40 years, then you can expect a reduction in your risk of 68%, 81%, 89%, and 93%, respectively.[24]

The longer you maintain lower cholesterol, the more your plaque shrinks, and the more stable the existing plaque becomes (remember, heart attacks are usually caused by unstable plaque breaking off and clogging an artery, or the plaque rupturing and clotting).

You can think of the plaque as a pimple that could burst at any time. Lowering LDL stabilizes the plaque and is like turning the pimple into a solid wart with almost no risk of bursting.

Are there tests that measure the amount of plaque in my arteries?

Yes, the two most common are a CT angiogram (CTA) and coronary artery calcium (CAC) score.

CAC Score. A CAC score is a type of CT scan that measures the amount of calcified plaque in your coronary arteries.

My LDL has been high for most of my life. I spent far too long trying to correct it with diet, exercise, and supplements. It wasn't until 2022, when I checked my CAC score, that I finally went on a statin. According to my CAC score I have more calcified plaque in my arteries than 67% of people my age. Not good. I eat a heart-healthy diet, exercise, and have a low body fat percentage. But I have genetically high lp(a).

A positive CAC score is a warning sign for heart disease.[25] And a CAC score of zero is also an important factor to consider when determining your risk.[26] But a CAC score of zero does not mean you have zero risk of heart disease. Heart disease can still occur in those with a zero score.[27]

The MESA Risk Score and Coronary Age Calculator calculates your 10-year risk of heart disease, with and without, your CAC score.

CTA. A CTA is better than a CAC score, but it costs more and exposes you to more radiation and contrast die. A CTA can detect soft plaque that hasn't hardened with calcium yet, and it can detect the narrowing of arteries.

What is lp(a) and why should I care?

Lipoprotein(a), known as lp(a), is an especially dangerous type of cholesterol-carrying protein. It is technically a type of LDL particle, but it raises your risk of heart disease much more than normal LDL. The normal range for lp(a) goes up to 100 nmol/L.[28] My lp(a) has been as high as 196.

Everyone should have their lp(a) checked at least once. About 20 to 30% of people have high lp(a).[29]

Unfortunately, lp(a) doesn't respond to diet or exercise, and there are no approved drugs for it – yet.[30] If you have high lp(a), the recommended approach is to reduce your overall risk of heart disease as much as you can.[31]

You can lower your overall risk with medication that lowers LDL, treating high blood pressure and high blood sugar, eating a heart-healthy diet, being physically active, maintaining a healthy weight, stopping tobacco and nicotine use, avoiding second-hand smoke, and getting at least seven hours of sleep per night.[32]

A new online calculator has been developed by the European Atherosclerosis Society to incorporate lp(a) into your overall risk of heart disease. The calculator gives your risk of having a heart attack or stroke up to age 80, and lets you compare your risk with and without your lp(a) number. It also shows how much your overall risk will be lowered if you reduce your LDL. This lets you determine how much you can counteract your high lp(a) by reducing your LDL. The calculator is available **here**.

Unfortunately, most doctors don't routinely run lp(a) blood tests for their patients. Both my wife and I had to ask for it. If we hadn't been proactive, we may have never known about this important independent risk factor.

Am I safe if my 10-year risk is low?

There are online calculators that measure your 10-year risk of developing heart disease.[33] But if you wait until your 10-year risk is high, it may be too late. For 40 – 50% of people, the first sign of heart disease is a fatal heart attack. You usually don't get a warning sign.

Heart disease organizations now acknowledge that those under age 60 should pay attention to lifetime risk.[34] Unfortunately, no calculator measures your lifetime risk after considering lp(a) and/or a CAC score. Plus, the online calculators only consider a few variables, such as age, sex, cholesterol, blood pressure, whether you smoke, and medication use. When assessing your risk of heart disease, you must consider other factors that may put you into a higher risk category, and require a lower LDL, than might be apparent from just looking at your 10-year risk.

These factors include:[35]

- Diabetes
- Smoking
- Blood pressure over 120/80
- Chronic kidney disease
- Family history of heart disease (a heart attack or sudden cardiac death (1) before age 55 in father or other male first-degree relative, or (2) before age 65 in mother or other female first-degree relative)
- BMI of 30 or higher
- Central obesity, which is a waist circumference of 31.5 inches or greater for women and 37 inches or greater for men (a waist size of 35.4 inches or more for men of African Caribbean, South Asian, Chinese, and Japanese origin is a risk factor)
- Triglycerides of 175 mg/dL or higher
- Metabolic syndrome, which is defined as at least 3 of these: (1) central obesity, (2) triglycerides over 150, (3) elevated blood pressure, (4) elevated glucose, and (5) HDL under 40 in men and under 50 in women
- Lp(a) over 100 nmol/L
- CAC score of 100 Agatston units or greater, or a CAC score in the 75th percentile or greater

- CAC score greater than zero Agatston units for those 55 and older
- Clotting factors
- High inflammation markers, such as c-reactive protein[36] and Lp-PLA2
- High uric acid
- Social deprivation
- Depression, anxiety, and other major psychiatric disorders
- Physical inactivity
- Psychosocial stress including vital exhaustion
- Chronic immune-mediated inflammatory disorder
- Treatment for HIV
- Use of cocaine
- Atrial fibrillation
- Left ventricular hypertrophy
- Obstructive sleep apnea syndrome
- Non-alcoholic fatty liver disease
- Familial hypercholesterolemia
- Being part of a high-risk population, such as South Asian ancestry

I thought LDL caused heart disease – so why are those other factors important?

Diabetes, high blood pressure, smoking, obesity, depression, lack of physical activity, and the other factors above all exacerbate atherosclerosis. You don't need any of those factors to develop heart disease, but they can make it worse and cause it to progress faster. For example, smoking and high blood pressure (two of the most important risk factors, after cholesterol) damage the inner wall of the arteries, making it more likely any cholesterol deposited there will lead to heart disease.

Can a healthy lifestyle reduce my risk of heart disease?

Yes. According to the AHA, "The most important way to prevent [heart disease], is to promote a healthy lifestyle throughout life."[37] The heritability of heart health is very low, meaning that lifestyle accounts for most of your risk. You may never need medication if you have a healthy lifestyle, according to the metrics discussed below.

Dean Ornish, who published one of the first studies showing you can reverse heart disease with lifestyle, had this to say:[38]

"Sometimes we have a hard time believing that such simple choices as what we eat, how we respond to stress, how much exercise we get, whether or not we smoke, and the quality of intimacy and social relationships in our lives can make such a powerful difference in our health and our well-being – but they do."

Even if you have relatively low cholesterol, blood pressure, blood sugar, and BMI, you are not guaranteed to avoid heart disease, so everyone should pay attention to the lifestyle factors below, including psychological health.[39] A healthy lifestyle will also improve many other aspects of your mental, physical, and emotional health, and reduce your risk of cancer, diabetes, and Alzheimer's disease.

What are the key metrics for heart health?

In 2022, the AHA published a paper called Life's Essential 8. It explains the ideal metrics for improving and maintaining cardiovascular health, along with a 100-point scoring system.[40] Check your 100-point scoring system.

Less than 1% of Americans have ideal cardiovascular health or even an ideal heart-healthy diet.[41] Those scoring higher on the Life's Essential 8 quiz have a lower risk of heart disease, in a stepwise manner (the higher your score the lower your risk of heart disease). Those with the highest number of ideal metrics have an 80% reduced risk of heart disease.[42]

Below are the eight metrics for optimal cardiovascular health for adults 20 and older.[43]

1. Cholesterol in a healthy range.[44]
2. A heart-healthy diet.[45]
3. At least 150 minutes of moderate[46] (or greater) intensity physical activity per week. You reduce the risk of heart disease even more with 300 minutes per week of moderate intensity activity or greater than 150 minutes of vigorous-intensity activity.[47] Other heart disease guidelines also recommend strength training at least twice per week.[48]
4. Never using tobacco or nicotine products (including e-cigarettes and vaping devices) or living with an active indoor smoker.
5. Seven to nine hours of sleep per night.
6. A BMI less than 25. As mentioned earlier, it is also important for women to have a waist size under 31.5 inches and men under 37 inches (35.4 inches for men of African Caribbean, South Asian, Chinese, and Japanese origin). Measure waist size halfway between your lowest rib and the top of your hip bone, a few hours after your last meal. Measure after a breath out.
7. HbA1c (average blood sugar over the last 2-3 months) less than 5.7.
8. Blood pressure less than 120/80. Measuring blood pressure at home is more accurate than at a doctor's office.[49] Here is a link to instructions on measuring your blood pressure.

Before taking your blood pressure, has your doctor ever asked whether you need to empty your bladder, or if you have exercised, consumed caffeine, or had alcohol in the last 30 minutes? Mine hasn't. Have they asked you to sit quietly without talking for 5 minutes before taking a reading? And then taken two more readings a few minutes apart – still with no talking by them or you? Of course not, that never happens. This is why at home measurements are more accurate – *you* can actually follow the proper protocol.[50] Make sure to use a validated blood pressure device (see validatebp.org or stridebp.org/bp-monitors/).

If more than one factor needs to be improved, don't try to address them all at the same time. This can be overwhelming.

Here is a little extra motivation. When the AHA analyzed the ideal lifestyle factors for optimal brain health, they realized the exact same factors above also reduce your risk of cognitive decline, dementia, and Alzheimer's disease.[51] According to the Global Council for Brain Health, "what's good for the heart is good for the brain." You improve your brain health at the same time you improve your heart health.

The use of inhaled nicotine delivery products, including traditional cigarettes, e-cigarettes, and vaping, is the leading cause of preventable death in the U.S., including about a third of all deaths from heart disease.[52] Smoking may triple the risk of dying from heart disease.[53] Even low levels of smoking increase the risk of a heart attack.[54]

But all eight factors are important. For example, one study found that losing an hour of sleep, due to

daylight savings time, was associated with a 24% increase in the number of heart attacks on the following Monday.[55] On average, every one hour/night decrease in sleep below seven hours is associated with a 6% higher risk of heart disease.[56]

What are the ideal foods to prevent heart disease?

The best analysis of the ideal foods for preventing heart disease is a 2017 study funded by the Bill & Melinda Gates Foundation.[57] Researchers from several universities collaborated to analyze the foods and nutrients associated with the lowest risk of heart disease, stroke, and diabetes. Below are their recommendations of what to consume.

Per day, at least:

- Fruit 300 g (excluding juices)
- Vegetables 400 g (excluding juices, potatoes, corn, and salted or pickled vegetables)
- Legumes 100 g
- Whole grains 125 g
- Enough oily fish to average 250 mg of EPA/DHA per day
- Fiber 30 g

Per week:

- Nuts/seeds 5 oz
- Seafood 12.5 oz

No more than:

- Red meat 3.5 oz/week
- Sodium 2,000 mg/day (the AHA recommends limiting sodium to 1,500 mg/day if you have high blood pressure)

Avoid all:

- Processed meat [58]
- Sugar-sweetened beverages

Is saturated fat important?

Yes, very important. One factor missing from the analysis above was the optimal amount of saturated fat.[59]

Humans don't need to eat saturated fat, as our bodies make all we need. There are no known risks from consuming a low intake of saturated fat. The National Academy of Medicine and the European Food Safety Authority recommend intake of saturated fat be as low as possible while consuming a nutritionally adequate diet.[60] The National Academy did not set an upper limit on saturated fat because "any incremental increase in saturated fat" increases the risk of heart disease.[61] But it is almost impossible, and not necessary, to eliminate saturated fat from your diet. The most recent heart disease guidelines recommend saturated fat intake be less than 7% of calories if you have high cholesterol.[62] The largest contributors to saturated fat are fatty cuts of meat, full fat milk/cheese/yogurt/cream cheese, and foods made with coconut oil, butter, palm oil, and palm kernel

oil.

YES, YOU READ THAT RIGHT – COCONUT OIL IS NOT A HEALTH PROMOTING FOOD. IT MAY BE MORE HARMFUL THAN BUTTER DUE TO THE SATURATED FAT THAT INCREASES LDL.[63]

Heart disease organizations recommend consuming liquid plant oils (such as canola oil, olive oil, avocado oil, hemp seed oil, flax seed oil, corn oil, soybean oil, safflower oil, sunflower oil, and grapeseed oil) in place of fats that are solid at room temperature (such as coconut oil, butter, ghee, palm oil, palm kernel oil, lard, bacon grease, poultry fat, and tallow).

Should I limit dietary cholesterol?

The amount of saturated fat you consume is much more important than the amount of dietary cholesterol, but it shouldn't be ignored. "Dietary cholesterol" is the cholesterol found in food, not the cholesterol in your blood. Previous dietary guidelines recommended limiting dietary cholesterol to 300 milligrams per day. But the current Dietary Guidelines for Americans recommend keeping dietary cholesterol "as low as possible without compromising the nutritional adequacy of the diet."[64]

Eggs, shrimp, and lobster are particularly high in dietary cholesterol. The AHA recommends limiting eggs to seven per week, and limiting shrimp and lobster to 21 ounces per week, if you have a healthy LDL level.[65] But if you have high LDL, try to consume no more than two eggs per week and no more than six ounces of shrimp and lobster per week.

Are soy foods good for me?

There is a lot of misinformation about soy. Soy foods such as tofu, tempeh, unsweetened soy milk, and edamame are healthy foods we should be eating more of. Eating soy foods can lower LDL.[66] But steer clear of ultra-processed soy foods that are packed with extra salt and added sugar.

Soy does not cause cancer, disrupt sex hormones, or impair thyroid function. The World Cancer Research Fund found evidence soy can *reduce* the risk of breast cancer recurrence and help you live longer.[67] The Dietary Guidelines for Americans consider fortified soy products a healthy alternative to dairy foods.

Can you reduce your risk of heart disease by just eating healthier?

In the Lyon Diet Heart Study, participants were counseled to (1) eat more green vegetables, root vegetables, fish, and bread, (2) have fruit at least once daily, (3) replace red meat with poultry, and (4) replace butter and cream with a margarine that was very similar to olive oil. After about four years, the participants reduced their risk of heart disease-related events[68] by 50-70%.[69]

In the 4.8-year PREDIMED study, participants assigned to a Mediterranean diet high in olive oil or nuts had 30% and 28% reductions, respectively, in strokes, heart attacks, and heart disease-related deaths, compared to those eating the control diet that wasn't supplemented with olive oil or nuts.[70]

When the results of PREDIMED were reanalyzed, they discovered that those eating the most plant foods (versus animal foods) reduced their risk of death during the study by 41%. [71] But all plant foods are not created equal. Consuming sugar-sweetened beverages, sweets, desserts, French fries, chips, fruit juice, and refined grains are associated with worse health.[72] These ultra-processed versions of plant foods are rich in added sugars, added salt, saturated fat, refined grains, and flavor

enhancers.

Should I drink alcohol to lower my risk of heart disease?

Sorry Blue Zones devotees, due to updated research, alcohol, including wine, is no longer considered a health promoting beverage. Researchers recently found flaws in the studies indicating moderate alcohol consumption may have protective heart and brain benefits.[73] These studies did not distinguish between those who never drank and those who quit drinking due to a health condition.

According to the Global Burden of Disease research group, alcohol consumption was responsible for 2.44 million deaths in 2019.[74] They found the "healthiest amount of alcohol to consume is zero."[75] The World Cancer Research Fund now warns, "for cancer prevention, it is best not to drink alcohol." The World Health Organization no longer sets a particular limit on alcohol consumption because "the evidence shows that the ideal solution for health is not to drink at all."[76] The American Heart Association's Scientific Statement on nutrition states, "the AHA does not support initiation of alcohol intake at any level to improve cardiovascular health, given the uncertainty about net health effects, especially in light of the deleterious effects of alcohol on numerous other outcomes (injuries, violence, digestive diseases, infectious diseases, pregnancy outcomes, and cancer)."[77]

Are there safe supplements that reduce the risk of heart disease?

There are a few supplements worth mentioning. About two grams of phytosterols per day can lower LDL cholesterol by 7-10%.[78] And 3 to 10 grams of beta glucan fiber (from oats and barley) can lower LDL by 3-5%. Other supplements for lowering cholesterol are considered unproven or too dangerous.[79]

Fish oil is used to treat high triglycerides (over 500m g/dL),[80] but is no longer recommended generally for the prevention of heart disease as the studies have been inconsistent.[81] However, as described above in the ideal foods section, guidelines do recommend two to three servings of fatty fish[82] per week (fried or dried/smoked fish don't count).[83]

The biggest risk with taking any supplement is that you may not get what is on the label.[84] In the US, dietary supplements are not regulated like medications. Anyone can slap a label on a product and start selling it online. That is why I check my supplements with a third-party tester, such as ConsumerLab or NSF.

Should I take aspirin to prevent heart disease?

Aspirin is no longer recommended for the primary *prevention* of heart disease, due to the lack of net benefit after considering the risk of gastrointestinal bleeding.[85]

Do things like mental health, stress, anxiety, social support, relationships, loneliness, and sense of well-being affect my risk of heart disease?

Psychological health didn't make it into Life's Essential 8 as they found it to be an important *foundational* factor underlying all 8 metrics. Psychological health can also be difficult to measure and modify.

Psychological health and well-being take into account optimism, social support, resiliency, mindfulness, gratitude, sense of purpose, environmental mastery, anxiety, anger/hostility, chronic stress, pessimism, and depression.[86] These psychological factors influence heart health directly (by affecting inflammation, immune response, blood sugar, cholesterol, heart rhythms, blood coagulation, and vasospasm[87]) and indirectly (by affecting your likelihood of eating healthy, getting enough sleep and exercise, not smoking, and adhering to your prescription medications).[88]

Some research indicates these factors can be as important as more traditional risk factors, such as blood pressure and cholesterol. Work-related stress, social isolation/loneliness, and PTSD have been associated with a 40%, 50%, and 61% increased risk of heart disease, respectively.[89] Numerous studies have found that people with depression have an increased risk of developing heart disease, having a heart attack or stroke, and dying from heart disease. Depression can be improved with treatments such as antidepressants, psychotherapy, exercise, and light therapy. A 2024 network meta-analysis showed exercise is more effective than the leading drugs (SSRIs) but combining medication with exercise was even more effective.[90] Similarly light therapy is more effective than antidepressant drugs, but the combination of drugs and light therapy work even better.[91]

Optimism, having a sense of purpose, positivity, and an overall sense of well-being have been associated with a 65%, 83%, 78%, and 71% decreased risk of heart disease.[92]

The mind, heart, and body are all connected and can influence each other in powerful ways. This is why I created my Health & Well-Being Journal. It includes daily prompts to foster gratitude, optimism, a sense of purpose, and activities to manage stress.

What should I do first?

Less than 20% of Americans know their numbers.[93] Don't be one of them. Talk to your physician or go to WalkinLab.com and order lipoprotein(a), ApoB, HbA1c, and c-reactive protein tests, as well as a standard lipid panel (I have no affiliation with Walk-in Lab). Then take your results, and a list of your other risk factors, to a cardiologist to discuss your options.

If your LDL is not already in the ideal range, do everything you can to lower it to a healthy level. You can try diet, exercise, and sleep first, but don't wait twenty-five years to talk to a cardiologist like I did. If you don't get your numbers in check within a few months, then consider cholesterol lowering medication.

I used to think if my LDL wasn't low enough, I wasn't eating healthy enough. We are all different. Some may be able to hit their cholesterol goals with healthy foods but not everyone. My cholesterol varies widely, even when my diet, exercise, and weight are the same. So don't be shy about retesting your cholesterol to ensure it stays in a healthy range.

There is a dangerous myth that if you eat a whole food plant-based or vegan diet, then you can ignore your high cholesterol. There is no evidence to support this. Believe me, I tried to find it, as I don't like taking medications.

Even with no risk factors, official guidelines recommend keeping LDL under 116.[94] But many experts recommend 100 as a maximum LDL.[95] Peter Attia recommends LDL of 10 to 20, similar to what we are born with.[96] I now check my ApoB, instead of LDL, as it is a more accurate predictor of heart disease. My goal is to keep ApoB under 90. I encourage you to err on the side of caution and be aggressive lowering your numbers to the desired levels. Lower is usually better when it comes to LDL, ApoB, and Non-HDL cholesterol, if your lower cholesterol is due to a healthy lifestyle or one or

more of the drugs discussed in this blog (or the endnotes).[97]

Conclusion

The purpose of this blog is to bring attention to the experts' most recent guidelines on the prevention of heart disease, and to foster a productive and informed discussion with your cardiologist. After reading this blog you may know more about the prevention of heart disease than your primary physician. This is why I recommend having these discussions with a cardiologist who is an expert in heart disease, preferably one who is a member of the American College of Cardiology.

But I just read coconut oil helps you lose weight, and low cholesterol is actually a bad thing, and saturated fat is healthy, and that we should have more salt, not less, and that we never really landed on the moon, and that keto and carnivore diets are the secret to weight loss and perfect health???

You can check the information in this blog with the official guidelines of the experts, such as the European Atherosclerosis Society, European Society of Cardiology, American College of Cardiology, and American Heart Association. When it comes to heart disease, beware of anyone claiming to have discovered the secret truth that the experts haven't figured out. That is a big red flag telling you what you are about to read is quackery.

For other reputable resources on heart disease, nutrition, sleep, and physical activity, see the resources below (in addition to the references in the endnotes to this blog):

- The Peter Attia Drive podcast
- The Sigma Nutrition Radio podcast
- Simon Hill's The Proof podcast
- Gil Carvalho's Nutrition Made Simple! Youtube channel

That was a lot of information – do you have a simple summary?

Yes, you can download my free heart disease prevention checklist.

It includes the ideal metrics and a place for you to record your numbers. It also includes the recommended foods (and amounts) for not only the prevention of heart disease, but also the prevention of cancer, diabetes, and Alzheimer's disease. If you want to track your progress eating the right foods, improving your sleep, or exercising – enter your email at the bottom of this **page** and I will send you a printable habit tracker.

Please forward this to at least one person you care about. Following the advice in this blog could add decades to someone's health span and lifespan, just by checking their cholesterol and treating it if it is high.

WITH ANY QUESTIONS YOU MAY HAVE REGARDING A MEDICAL CONDITION OR TREATMENT AND BEFORE UNDERTAKING A NEW HEALTH CARE REGIMEN, AND NEVER DISREGARD PROFESSIONAL MEDICAL ADVICE OR DELAY IN SEEKING IT BECAUSE OF SOMETHING YOU HAVE READ ON THIS WEBSITE.

I hope this contributes to your health and happiness.

References

[1] American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. 2024 Heart Disease and Stroke Statistics: A Report of US and Global Data From the American Heart Association. Circulation. 2024 Feb 20;149(8):e347-e913.

[2] Statins are the most used medication to lower cholesterol. The most common side effects of statins are headache, dizziness, feeling sick, feeling unusually tired or physically weak, digestive system problems, such as constipation, diarrhea, indigestion or farting, muscle pain, sleep problems, and low blood platelet count. https://www.nhs.uk/conditions/statins/side-effects/

Statins also moderately raise blood sugar and therefore moderately increase the risk of diabetes, but the reduced risk of heart disease shown with statins takes into account this slight increase in the risk of diabetes.

Cholesterol Treatment Trialists' (CTT) Collaboration. Effects of statin therapy on diagnoses of new-onset diabetes and worsening glycaemia in large-scale randomised blinded statin trials: an individual participant data meta-analysis. Lancet Diabetes Endocrinol. 2024 May;12(5):306-319.

Other drugs used to lower cholesterol include cholesterol absorption inhibitors, monoclonal antibody medications, and PCSK9 inhibitors.

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[4] Low-density lipoproteins cause atherosclerotic cardiovascular disease: pathophysiological, genetic, and therapeutic insights: a consensus statement from the European Atherosclerosis Society Consensus Panel. Eur Heart J. 2020 Jun 21;41(24):2313-2330.

[5] "However, as discussed earlier in this report, changes in HDL cholesterol caused by diet or drug treatments can no longer be directly linked to changes in CVD, and therefore, the LDL cholesterol–raising effect should be considered on its own." Sacks FM, et al; American Heart Association. Dietary Fats and Cardiovascular Disease: A Presidential Advisory From the American Heart Association. Circulation. 2017 Jul 18;136(3):e1-e23.

Ference BA, et al. Low-density lipoproteins cause atherosclerotic cardiovascular disease. 1. Evidence from genetic, epidemiologic, and clinical studies. A consensus statement from the European Atherosclerosis Society Consensus Panel. Eur Heart J. 2017 Aug 21;38(32):2459-2472.

Behbodikhah, Jennifer et al. "Apolipoprotein B and Cardiovascular Disease: Biomarker and Potential Therapeutic Target." Metabolites vol. 11,10 690. 8 Oct. 2021.

Sniderman AD, et al. A meta-analysis of low-density lipoprotein cholesterol, non-high-density lipoprotein cholesterol, and apolipoprotein B as markers of cardiovascular risk. Circ Cardiovasc Qual

Outcomes. 2011 May;4(3):337-45.

[6] ApoB includes LDL, VLDL (and their remnants), IDL, and lp(a) (which is a subset of LDL). ApoB-containing proteins that are less than 70 nm can enter arteries. LDL are about 90% of circulating apoB-containing lipoproteins in fasting blood.

Low-density lipoproteins cause atherosclerotic cardiovascular disease: pathophysiological, genetic, and therapeutic insights: a consensus statement from the European Atherosclerosis Society Consensus Panel. Eur Heart J. 2020 Jun 21;41(24):2313-2330.

[7] 2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. The Task Force for the management of dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS). Eur Heart J. 2020 Jan 1;41(1):111-188.

Glavinovic T, et al. Physiological Bases for the Superiority of Apolipoprotein B Over Low-Density Lipoprotein Cholesterol and Non-High-Density Lipoprotein Cholesterol as a Marker of Cardiovascular Risk. J Am Heart Assoc. 2022 Oct 18;11(20):e025858.

[8] Low-density lipoproteins cause atherosclerotic cardiovascular disease: pathophysiological, genetic, and therapeutic insights: a consensus statement from the European Atherosclerosis Society Consensus Panel. Eur Heart J. 2020 Jun 21;41(24):2313-2330.

[9] To convert from mg/dL to nmol/L, divide by 38.67.

[10] Low-density lipoproteins cause atherosclerotic cardiovascular disease: pathophysiological, genetic, and therapeutic insights: a consensus statement from the European Atherosclerosis Society Consensus Panel. Eur Heart J. 2020 Jun 21;41(24):2313-2330.

[11] 2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. The Task Force for the management of dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS). Eur Heart J. 2020 Jan 1;41(1):111-188.

[12] American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. 2024 Heart Disease and Stroke Statistics: A Report of US and Global Data From the American Heart Association. Circulation. 2024 Feb 20;149(8):e347-e913.

Also, see https://professional.heart.org/-/media/PHD-Files-2/Science-News/2/2024-Heart-and-Stroke-Stat-Update/2024-Heart-and-Stroke-Statistics-Infographics.pdf

[13]	Very-high-risk	High risk	Moderate risk	Low risk
LDL	<55	<70	<100	<116
Non-HDL	<85	<100	<130	
ApoB	<65	<80	<100	

2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. The Task Force for the management of dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS). Eur Heart J. 2020 Jan 1;41(1):111-188.

[14] Low-density lipoproteins cause atherosclerotic cardiovascular disease: pathophysiological, genetic, and therapeutic insights: a consensus statement from the European Atherosclerosis Society Consensus Panel. Eur Heart J. 2020 Jun 21;41(24):2313-2330.

[15] Blankenhorn DH, et al. MARS Research Group. Coronary angiographic changes with lovastatin therapy. The Monitored Atherosclerosis Regression Study (MARS). Ann Intern Med. 1993 Nov 15;119(10):969-76.

Chhatriwalla AK, et al. The ASTEROID trial: coronary plaque regression with high-dose statin therapy. Future Cardiol. 2006 Nov;2(6):651-4.

[16] Nicholls SJ, et al. Effect of Evolocumab on Progression of Coronary Disease in Statin-Treated Patients: The GLAGOV Randomized Clinical Trial. JAMA. 2016 Dec 13;316(22):2373-2384.

Low-density lipoproteins cause atherosclerotic cardiovascular disease: pathophysiological, genetic, and therapeutic insights: a consensus statement from the European Atherosclerosis Society Consensus Panel. Eur Heart J. 2020 Jun 21;41(24):2313-2330.

[17] Wang N, Woodward M, Huffman MD, Rodgers A. Compounding Benefits of Cholesterol-Lowering Therapy for the Reduction of Major Cardiovascular Events: Systematic Review and Meta-Analysis. Circ Cardiovasc Qual Outcomes. 2022 Jun;15(6):e008552.

[18] Enos WF, et al. Coronary disease among United States soldiers killed in action in Korea: preliminary report. J Am Med Assoc. 1953;152:1090–1093.

[19] Stary HC. Evolution and progression of atherosclerotic lesions in coronary arteries in children and young adults. Arteriosclerosis. 1989;9(Suppl I):I19–I32.

[20] 2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol: Executive Summary: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. J Am Coll Cardiol. 2019 Jun 25;73(24):3168-3209.

[21] Virani SS, Alonso et al; American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. Heart Disease and Stroke Statistics-2021 Update: A Report From the American Heart Association. Circulation. 2021 Feb 23;143(8):e254-e743.

[22] The average age of a cardiac event in men is 65.6 years and in women is 72.0 years.

American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. 2024 Heart Disease and Stroke Statistics: A Report of US and Global Data From the American Heart Association. Circulation. 2024 Feb 20;149(8):e347-e913.

[23] Sniderman AD, et al. Risk of Premature Cardiovascular Disease vs the Number of Premature Cardiovascular Events. JAMA Cardiol. 2016;1(4):492–494.

[24] Low-density lipoproteins cause atherosclerotic cardiovascular disease: pathophysiological, genetic, and therapeutic insights: a consensus statement from the European Atherosclerosis Society Consensus Panel. Eur Heart J. 2020 Jun 21;41(24):2313-2330.

[25] For intermediate risk adults, the AHA considers it is a reasonable decision to take cholesterol

lowering medication if (1) you are 55 or older and have a CAC score above zero, or (2) you are any age and have a CAC score above 100 or in the 75th percentile or higher.

2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol: Executive Summary: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. J Am Coll Cardiol. 2019 Jun 25;73(24):3168-3209.

[26] Blaha MJ, et al. Role of Coronary Artery Calcium Score of Zero and Other Negative Risk Markers for Cardiovascular Disease: The Multi-Ethnic Study of Atherosclerosis (MESA). Circulation. 2016 Mar 1;133(9):849-58.

[27] Hussain A, Ballantyne CM, Nambi V. Zero Coronary Artery Calcium Score: Desirable, but Enough? Circulation. 2020 Sep 8;142(10):917-919.

[28] Wilson DP, et al. Use of Lipoprotein(a) in clinical practice: A biomarker whose time has come. A scientific statement from the National Lipid Association. J Clin Lipidol. 2022 Sep-Oct;16(5):e77-e95. Erratum for: J Clin Lipidol. 2019 May – Jun;13(3):374-392.

[29] Tsimikas S, et al. NHLBI Working Group Recommendations to Reduce Lipoprotein(a)-Mediated Risk of Cardiovascular Disease and Aortic Stenosis. J Am Coll Cardiol. 2018 Jan 16;71(2):177-192.

https://www.heart.org/en/health-topics/cholesterol/genetic-conditions/lipoprotein-a

[30] Antisense oligonucleotides (ASOs) are a potential treatment for lowering lp(a) levels.

Tsimikas S, et al; AKCEA-APO(a)-LRx Study Investigators. Lipoprotein(a) Reduction in Persons with Cardiovascular Disease. N Engl J Med. 2020 Jan 16;382(3):244-255.

[31] Kronenberg F, et al. Frequent questions and responses on the 2022 lipoprotein(a) consensus statement of the European Atherosclerosis Society. Atherosclerosis. 2023 Jun;374:107-120.

PCSK9 inhibitors are not designed to lower lp(a), but in clinicial trials have been shown to lower it by 10-20%. Evinacumab (a monoclonal antibody medication) has also been shows to lower lp(a) in patients with homozygous familial hypercholesterolaemia.

2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. The Task Force for the management of dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS). Eur Heart J. 2020 Jan 1;41(1):111-188.

[32] Kronenberg F, et al. Frequent questions and responses on the 2022 lipoprotein(a) consensus statement of the European Atherosclerosis Society. Atherosclerosis. 2023 Jun;374:107-120.

[33] The newest calculator is called Prevent and is available at the link below. Prevent gives 10 and 30 year risk estimates.

https://professional.heart.org/en/guidelines-and-statements/prevent-calculator

[34] 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: Executive Summary: A Report of the American College of Cardiology/American Heart Association Task Force

on Clinical Practice Guidelines. Circulation. 2019 Sep 10;140(11):e563-e595.

American College of Cardiology/American Heart Association Task Force on Practice Guidelines. 2013 ACC/AHA guideline on the assessment of cardiovascular risk: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Circulation. 2014 Jun 24;129(25 Suppl 2):S49-73.

[35] 2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. The Task Force for the management of dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS). Eur Heart J. 2020 Jan 1;41(1):111-188.

2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: Executive Summary: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2019 Sep 10;140(11):e563-e595.

2018 AHA/ACC/AACVPR/AAPA/ABC/ACPM/ADA/AGS/APhA/ASPC/NLA/PCNA Guideline on the Management of Blood Cholesterol: Executive Summary: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. J Am Coll Cardiol. 2019 Jun 25;73(24):3168-3209.

American College of Cardiology/American Heart Association Task Force on Practice Guidelines. 2013 ACC/AHA guideline on the assessment of cardiovascular risk: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. Circulation. 2014 Jun 24;129(25 Suppl 2):S49-73.

Consensus Statement by the American Association of Clinical Endocrinologists and American College of Endocrinology on the Management of Dyslipidemia and Prevention of Cardiovascular Disease Algorithm – 2020 Executive Summary. Endocr Pract. 2020 Oct;26(10):1196-1224.

[36] C-reactive protein of 2.0 mg/L or higher is a risk factor indicating inflammation in your body.

[37] 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2019 Sep 10;140(11):e596-e646.

[38] Dr. Dean Ornish's program For Reversing Heart Disease, The Random House Publishing Group (1996).

[39] Wilkins JT, et al. Lifetime risk and years lived free of total cardiovascular disease. JAMA. 2012 Nov 7;308(17):1795-801.

[40] American Heart Association. Life's Essential 8: Updating and Enhancing the American Heart Association's Construct of Cardiovascular Health: A Presidential Advisory From the American Heart Association. Circulation. 2022 Aug 2;146(5):e18-e43.

[41] American Heart Association. Life's Essential 8: Updating and Enhancing the American Heart Association's Construct of Cardiovascular Health: A Presidential Advisory From the American Heart Association. Circulation. 2022 Aug 2;146(5):e18-e43.

[42] American Heart Association. Life's Essential 8: Updating and Enhancing the American Heart

Association's Construct of Cardiovascular Health: A Presidential Advisory From the American Heart Association. Circulation. 2022 Aug 2;146(5):e18-e43.

[43] The Supplementary Materials to Life's Essential 8 contain separate metrics for children age 19 and younger. For example, for infants from 6 to 12 months, to qualify as eating a heart-healthy diet, they should eat vegetables at least once per day, fruit at least once per day, whole grains at least once per day; and consume no sweets, sugary drinks, fast food, or milk (other than human breast milk).

[44] Life's Essential 8 included an ideal metric of non-hdl cholesterol under 130 mg/dL, but this did not account for the variability of each person's unique risk factors which could require a much lower cholesterol level.

[45] They based an ideal heart-healthy diet on the following components of a Mediterranean diet:

(1) 2 or more servings of olive oil per day, (2) 7 or more servings of green leafy vegetables per week, (3) 2 or more servings of other vegetables per day, (4) 2 or more servings of berries per week, (5) 3 or less servings of red meat per week, (6) 1 or more servings of fish per week, (7) 5 or less servings of chicken per week, (8) 4 or less servings of full fat or regular cheese or cream cheese per week, (9) 5 or less servings of butter or cream per week, (10) 3 or more servings of beans per week, (11) 3 or more servings of whole grains per day, (12) 4 or less servings of commercial sweets, candy bars, pastries, cookies, or cakes per week, and (13) 1 or less meals at a fast food restaurant per week. Unfortunately, they don't define the serving sizes, so I don't find this very useful.

[46] It is at least moderate intensity if you raise your heart rate and start sweating.

[47] 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2019 Sep 10;140(11):e596-e646.

[48] Consensus Statement by the American Association of Clinical Endocrinologists and American College of Endocrinology on the Management of Dyslipidemia and Prevention of Cardiovascular Disease Algorithm – 2020 Executive Summary. Endocr Pract. 2020 Oct;26(10):1196-1224.

Available at https://pro.aace.com/pdfs/lipids/CS-2020-0490.pdf

[49] Unger T, et al. 2020 International Society of Hypertension Global Hypertension Practice Guidelines. Hypertension. 2020 Jun;75(6):1334-1357.

[50] For accurate readings, follow the blood pressure monitoring advice below (this is a compilation of the advice from the CDC, AHA, and International Society of Hypertension, which have slight variations).

(1) Don't eat, drink, exercise, or use caffeine for 30 minutes before you take your blood pressure. (2) Empty your bladder before your reading. (3) In a quiet room with a comfortable temperature, sit relaxed in a comfortable chair with your back supported for at least 5 minutes before your reading. (4) Avoid talking during the 5 minutes (if in a doctor's office, neither you nor the person taking the reading should talk during the 5 minutes), (5) Put both feet flat on the ground and keep your legs uncrossed. (6) Rest your arm with the cuff on a table at chest height. (7) Make sure the blood pressure cuff is snug but not too tight and is against your bare skin, not over clothing. (8) Take at least 3 readings, with 1 to 2 minutes between each (no talking between measurements). (9) Use the

average of the last two readings.

See https://www.cdc.gov/bloodpressure/measure.htm

https://www.heart.org/-/media/Files/Health-Topics/High-Blood-Pressure/How_to_Measure_Your_Blood_Pressure_Letter_Size.pdf

Unger T, et al. 2020 International Society of Hypertension Global Hypertension Practice Guidelines. Hypertension. 2020 Jun;75(6):1334-1357.

[51] American Heart Association/American Stroke Association. Defining Optimal Brain Health in Adults: A Presidential Advisory From the American Heart Association/American Stroke Association. Stroke. 2017 Oct;48(10):e284-e303.

[52] AHA Life's Essential 8™ Fact Sheet. Available at https://www.heart.org/en/healthy-living/healthy-lifestyle/lifes-essential-8/lifes-essential-8-fact-sheet

[53] Consensus Statement by the American Association of Clinical Endocrinologists and American College of Endocrinology on the Management of Dyslipidemia and Prevention of Cardiovascular Disease Algorithm – 2020 Executive Summary. Endocr Pract. 2020 Oct;26(10):1196-1224.

Available at https://pro.aace.com/pdfs/lipids/CS-2020-0490.pdf

[54] 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2019 Sep 10;140(11):e596-e646.

[55] https://newsroom.heart.org/news/heres-your-wake-up-call-daylight-saving-time-may-impact-your-heart-health

Sandhu A, Seth M, Gurm HS. Daylight savings time and myocardial infarction. Open Heart. 2014 Mar 28;1(1):e000019.

[56] American Heart Association Council on Epidemiology and Prevention Statistics Committee and Stroke Statistics Subcommittee. 2024 Heart Disease and Stroke Statistics: A Report of US and Global Data From the American Heart Association. Circulation. 2024 Feb 20;149(8):e347-e913.

[57] Micha R, et al. Etiologic effects and optimal intakes of foods and nutrients for risk of cardiovascular diseases and diabetes: Systematic reviews and meta-analyses from the Nutrition and Chronic Diseases Expert Group (NutriCoDE). PLoS One. 2017 Apr 27;12(4):e0175149.

I did not include their recommendation to consume 8 oz of yogurt per week, as the AHA no longer recommends dairy to reduce the risk of heart disease ("the evidence is mixed with regard to the effectiveness of dairy intake to reduce ASCVD [heart disease] risk factors, which is why it is not included in the listed foods for this recommendation"). Arnett DK, Blumenthal RS, et al. 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2019 Sep 10;140(11):e596-e646.

[58] Sausage, pepperoni, bacon, ham, bratwursts, hot dogs, bologna, pastrami, salami, corned beef,

beef jerky, turkey jerky, canned meat, and other luncheon meats.

[59] Instead of providing an optimal amount of saturated fat, they provided that an optimal amount of polyunstaturated fat (omega 3 and omega 6 fats) was 11% of total calories.

[60] DRI for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. 2005. National Academies Press.

Publication, E. (2010). EFSA Panel on Dietetic Products, Nutrition, and Allergies (NDA); Scientific Opinion on Dietary Reference Values for fats, including saturated fatty acids, polyunsaturated fatty acids, monounsaturated fatty acids, trans fatty acids, and cholesterol. EFSA Journal, 8.

[61] DRI for Energy, Carbohydrate, Fiber, Fat, Fatty Acids, Cholesterol, Protein, and Amino Acids. 2005. National Academies Press.

[62] 2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. The Task Force for the management of dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS). Eur Heart J. 2020 Jan 1;41(1):111-188.

[63] Although advertisements and claims on the internet give the impression the saturated fat in coconut oil is outweighed by its other beneficial nutrients, the evidence does not support this. After an extensive review of the data, researchers concluded that, despite rising popularity, coconut oil should not be viewed as a healthy oil. They called it “one of the most deleterious cooking oils that increases risk for cardiovascular disease.”

Neelakantan N, et al. The Effect of Coconut Oil Consumption on Cardiovascular Risk Factors: A Systematic Review and Meta-Analysis of Clinical Trials. Circulation. 2020 Mar 10;141(10):803-814.

[64] U.S. Department of Agriculture and U.S. Department of Health and Human Services. Dietary Guidelines for Americans, 2020-2025. 9th Edition.

[65] American Heart Association Nutrition Committee of the Council on Lifestyle and Cardiometabolic Health; Council on Arteriosclerosis, Thrombosis and Vascular Biology; Council on Cardiovascular and Stroke Nursing; Council on Clinical Cardiology; Council on Peripheral Vascular Disease; and Stroke Council. Dietary Cholesterol and Cardiovascular Risk: A Science Advisory From the American Heart Association. Circulation. 2020 Jan 21;141(3):e39-e53.

[66] 2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. The Task Force for the management of dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS). Eur Heart J. 2020 Jan 1;41(1):111-188.

[67] https://www.wcrf.org/diet-activity-and-cancer/global-cancer-update-programme/cancer-survivors/breast-cancer-survivors-and-mortality-risk/

[68] Heart attacks, stroke, heart failure, unstable angina, embolism, and hospitalizations.

[69] Nutrition Committee Population Science Committee and Clinical Science Committee of the American Heart Association. AHA Science Advisory: Lyon Diet Heart Study. Benefits of a Mediterranean-style, National Cholesterol Education Program/American Heart Association Step I

Dietary Pattern on Cardiovascular Disease. Circulation. 2001 Apr 3;103(13):1823-5.

[70] PREDIMED Study Investigators. Primary Prevention of Cardiovascular Disease with a Mediterranean Diet Supplemented with Extra-Virgin Olive Oil or Nuts. N Engl J Med. 2018 Jun 21;378(25):e34.

2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: Executive Summary: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2019 Sep 10;140(11):e563-e595.

[71] Martínez-González MA, et al. PREDIMED Group. A provegetarian food pattern and reduction in total mortality in the Prevención con Dieta Mediterránea (PREDIMED) study. Am J Clin Nutr. 2014 Jul;100 Suppl 1:320S-8S.

[72] Pro-vegetarian food patterns and cardiometabolic risk in the PREDIMED-Plus study: a cross-sectional baseline analysis. Eur J Nutr. 2022 Feb;61(1):357-372.

[73] Burton R, Sheron N. No level of alcohol consumption improves health. Lancet. 2018 Sep 22;392(10152):987-988.

Stockwell T, et al. Do “Moderate” Drinkers Have Reduced Mortality Risk? A Systematic Review and Meta-Analysis of Alcohol Consumption and All-Cause Mortality. J Stud Alcohol Drugs. 2016 Mar;77(2):185-98.

Maggs JL, Staff J. No Benefit of Light to Moderate Drinking for Mortality From Coronary Heart Disease When Better Comparison Groups and Controls Included: A Commentary on Zhao et al. (2017). J Stud Alcohol Drugs. 2017 May;78(3):387-388.

Britton A, Bell S. The protective effects of moderate drinking: lies, damned lies, and… selection biases? Addiction. 2017 Feb;112(2):218-219.

Fillmore KM, et al W. Moderate alcohol use and reduced mortality risk: systematic error in prospective studies and new hypotheses. Ann Epidemiol. 2007 May;17(5 Suppl):S16-23.

Stockwell T, Zhao J. Alcohol’s contribution to cancer is underestimated for exactly the same reason that its contribution to cardioprotection is overestimated. Addiction. 2017 Feb;112(2):230-232.

Naimi TS, et al. Selection biases in observational studies affect associations between ‘moderate’ alcohol consumption and mortality. Addiction. 2017 Feb;112(2):207-214.

Naimi TS, et al. Cardiovascular risk factors and confounders among nondrinking and moderate-drinking U.S. adults. Am J Prev Med. 2005 May;28(4):369-73.

Chikritzhs T, et al. Has the leaning tower of presumed health benefits from ‘moderate’ alcohol use finally collapsed? Addiction. 2015 May;110(5):726-7.

Association between alcohol and cardiovascular disease: Mendelian randomisation analysis based on individual participant data. BMJ. 2014 Jul 10;349:g4164.

[74] Alcohol use—Level 2 risk. www.TheLancet.com. Vol 396 October 17, 2020. Available at:

https://www.thelancet.com/pb-assets/Lancet/gbd/summaries/risks/alcohol-use.pdf

[75] Flor LS, Gakidou E. The burden of alcohol use: better data and strong policies towards a sustainable development. Lancet Public Health. 2020 Jan;5(1):e10-e11.

[76] World Health Organization. A healthy lifestyle – WHO Recommendations. Available at:

https://www.who.int/europe/news/item/04-01-2023-no-level-of-alcohol-consumption-is-safe-for-our-health

[77] Lichtenstein AH, Appel LJ, et al. 2021 Dietary Guidance to Improve Cardiovascular Health: A Scientific Statement From the American Heart Association. Circulation. 2021 Dec 7;144(23):e472-e487.

The specific nutrition recommendations in this Scientific Statement are consistent with the ideal foods for heart health discussed above but are less specific. Their 10 guidelines are: (1) Adjust energy intake and expenditure to achieve and maintain a healthy body weight, (2) Eat plenty of fruits and vegetables, choose a wide variety, (3) Choose foods made mostly with whole grains rather than refined grains, (4) Choose healthy sources of protein

(a) mostly protein from plants (legumes and nuts), (b) fish and seafood, (c) low-fat or fat-free dairy products instead of full-fat dairy products, (d) if meat or poultry are desired, choose lean cuts and avoid processed forms, (5) Use liquid plant oils rather than tropical oils (coconut, palm, and palm kernel), animal fats (eg, butter and lard), and partially hydrogenated fats, (6) Choose minimally processed foods instead of ultra-processed foods, (7) Minimize intake of beverages and foods with added sugars, (8) Choose and prepare foods with little or no salt, (9) If you do not drink alcohol, do not start; if you choose to drink alcohol, limit intake, and (10) Adhere to this guidance regardless of where food is prepared or consumed.

[78] 2019 ESC/EAS Guidelines for the management of dyslipidaemias: lipid modification to reduce cardiovascular risk. The Task Force for the management of dyslipidaemias of the European Society of Cardiology (ESC) and European Atherosclerosis Society (EAS). Eur Heart J. 2020 Jan 1;41(1):111-188.

[79] Such as monacolin, red yeast rice, policosanol, and barberine.

[80] American Heart Association Council on Arteriosclerosis, Thrombosis and Vascular Biology; Council on Lifestyle and Cardiometabolic Health; Council on Cardiovascular Disease in the Young; Council on Cardiovascular and Stroke Nursing; and Council on Clinical Cardiology. Omega-3 Fatty Acids for the Management of Hypertriglyceridemia: A Science Advisory From the American Heart Association. Circulation. 2019 Sep 17;140(12):e673-e691.

[81] For an excellent discussion of the benefits of EPA and DHA, and why some supplement studies fail to report a benefit, listen to Danny Lennon's interview with Bill Harris. Sigma Nutrition Radio. #432, Omega-3 Fatty Acids & Health. March 30, 2022.

[82] Such as salmon, sardines, trout, arctic char, mackerel, anchovies, herring and Pacific oysters.

[83] Lichtenstein AH, Appel LJ, et al. 2021 Dietary Guidance to Improve Cardiovascular Health: A Scientific Statement From the American Heart Association. Circulation. 2021 Dec

7;144(23):e472-e487.

[84] Cohen PA, et al. Presence and Quantity of Botanical Ingredients With Purported Performance-Enhancing Properties in Sports Supplements. JAMA Netw Open. 2023;6(7):e2323879.

[85] 2019 ACC/AHA Guideline on the Primary Prevention of Cardiovascular Disease: A Report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines. Circulation. 2019 Sep 10;140(11):e596-e646.

[86] Psychological Health, Well-Being, and the Mind-Heart-Body Connection: A Scientific Statement From the American Heart Association. Circulation. 2021 Mar 9;143(10):e763-e783.

[87] A temporary constriction of coronary arteries.

[88] Psychological Health, Well-Being, and the Mind-Heart-Body Connection: A Scientific Statement From the American Heart Association. Circulation. 2021 Mar 9;143(10):e763-e783.

[89] Psychological Health, Well-Being, and the Mind-Heart-Body Connection: A Scientific Statement From the American Heart Association. Circulation. 2021 Mar 9;143(10):e763-e783.

[90] They found that walking, jogging, yoga, and strength training were effective, and that exercise worked better when more intense. In fact, the benefits were proportional to the intensity of the exercise. But even lower-intensity exercises, such as yoga and walking, conferred meaningful benefit. Strength training and yoga were well tolerated compared to other forms of exercise. They also found that when participants were given more discretion in choosing how they exercised, the benefits were less (i.e. more autonomy was associated with weaker effects). The authors hypothesized that people with depression benefit from the clear direction and accountability of a standardized exercise protocol.

The effect of exercise was similar to that of psychotherapy.

Noetel M, et al. Effect of exercise for depression: systematic review and network meta-analysis of randomised controlled trials. BMJ. 2024 Feb 14;384:e075847.

Also, see Netz Y. Is the Comparison between Exercise and Pharmacologic Treatment of Depression in the Clinical Practice Guideline of the American College of Physicians Evidence-Based? Front Pharmacol. 2017 May 15;8:257.

[91] Geoffroy PA, et al. Efficacy of light therapy versus antidepressant drugs, and of the combination versus monotherapy, in major depressive episodes: A systematic review and meta-analysis. Sleep Med Rev. 2019 Dec;48:101213.

Maruani J, Geoffroy PA. Bright Light as a Personalized Precision Treatment of Mood Disorders. Front Psychiatry. 2019 Mar 1;10:85.

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