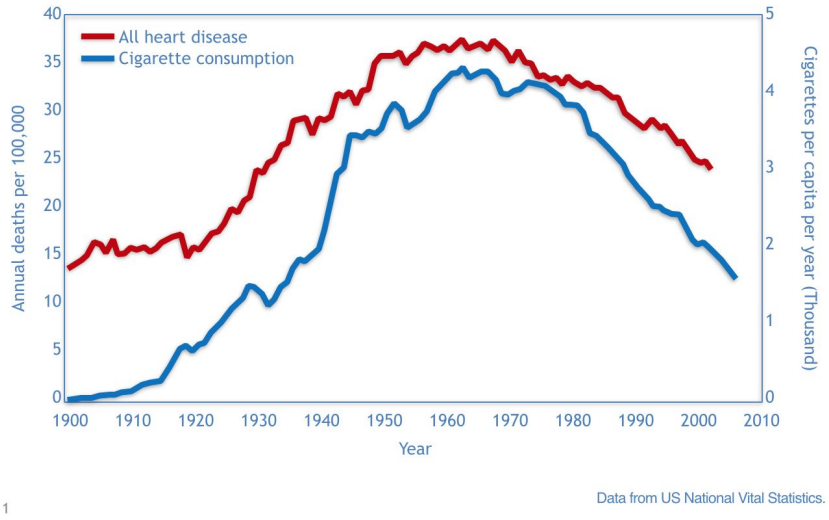
Consider the ingredients in the following low carb high fat recipe. "*Two pounds of de-boned white fish, one-half cup butter and two-thirds pint or more of cream, two tablespoon of flour, the juice of one half lemon, salt and pepper to taste.*" Excluding the fish and lemon, this recipe's saturated-fat-packed dairy to carbohydrate ratio is 19:1. Low carb or ketogenic cookbooks with recipes like this may sound like a delicious way to lose weight, but what about cholesterol and heart disease?

What's interesting about this saturated fat heavy recipe is that it isn't recent at all. It came from an 1895 cookbook, a time when heart disease rates were at an all time low. Almost every single recipe in "The Baptist Ladies' Cook Book" contains butter, eggs, cream or lard. And, if you rewind to ninety nine years earlier in 1796 when "The First American Cookbook" came out, you find plenty of recipes using plenty of lard and fat pork, and a majority of the recipes call for butter, usually by the pound or half pound.

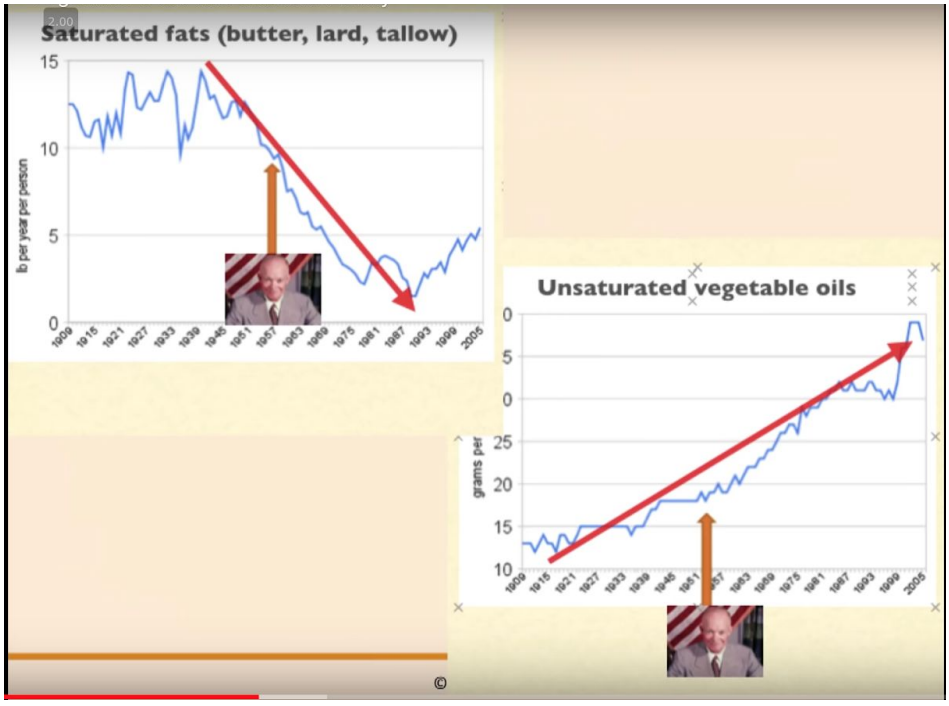
Before 1910, people in the United States almost exclusively used saturated fat heavy butter and animal fats for cooking and baking. At the time, cooking with vegetable oils was almost unheard of. But as the process of hulling and pressing seeds and beans was mechanized, vegetable oils became cheaper than butter or animal fat.

From 1909–1999, consumption of soybean oil in the United States increased by more than 1,000-fold per person, margarine consumption increased 12-fold, but consumption of butter and lard **decreased** by about four-fold each.

Sometime after 1910, there was concern about the growing rates of heart disease, and president Eisenhower's heart attack in 1955 really got the ball rolling on figuring out what *causes* heart disease. There were a couple places to look: for example, smoking rates were on the rise along with the rise of heart disease:



President Eisenhower by the way, had been a four-pack-a-day chainsmoker a couple years before his heart attack. Despite this, and the fact that the president's attack occurred right in the middle of the rapid decline of animal fat consumption and rapid rise of vegetable oil consumption, saturated fat took the blame.



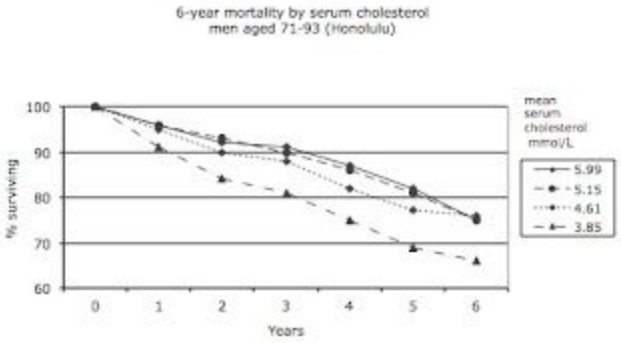
You probably know the rest: it was found that cholesterol is contained in the plaques that clog arteries, saturated fat increases your cholesterol. Thus, “artery clogging saturated fat” became a common phrase.

But before we get into whether having high cholesterol from eating too much saturated fat causes heart disease, let’s look at cholesterol itself. What is it for?

Well, first off, it’s very important for maintaining the integrity of cells in your body. Without it, your cells would turn to mush. A huge function of cholesterol is making and metabolizing hormones. Hence, cholesterol levels naturally rise throughout pregnancy, a time in which the body is producing all sorts of hormones to manufacture a fresh human. A 1997 study of university students found that cholesterol levels rose “*proportional to the degree of examination stress.*” When the body is under stress, it produces cholesterol to make hormones that help deal with the stress. If you are awakened by a burglar trying to break into your home at 4AM, but have a checkup later in the day, you can expect your cholesterol levels to be sky high and for your doctor to prescribe you a statin - a cholesterol lowering drug.

Cholesterol’s importance in hormone production also explains why men taking statins have been found to have lower testosterone.

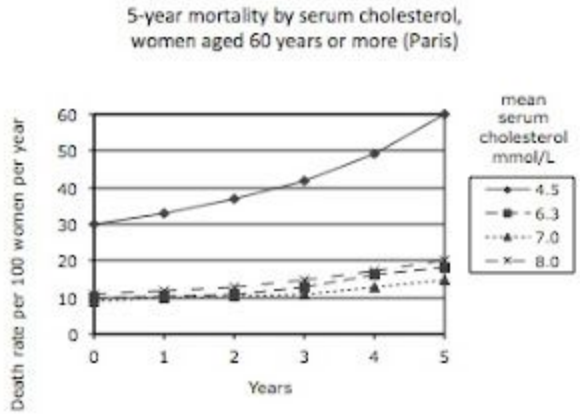
I hope we can agree that we need *some* cholesterol. But just how good is *less* cholesterol? A 2001 paper documents the changes in 3572 elderly people’s serum cholesterol concentrations over 20 years, and compared them with rates of death. They found that the group with the lowest cholesterol had the lowest rate of survival.



The author's interpretation? "*We have been unable to explain our results*"

You may have heard of the "French Paradox" - a term coined in the late 1980's that refers to the particularly low obesity and heart disease rate in France despite people getting as much as 40% of their energy intake from fat with 16% of it being saturated fat - **three** times the amount of Saturated Fat the American Heart Association recommends. One theory is that red wine is what allows French people to eat so much butter, cheese, cream, foie gras, and pate yet stay so healthy. So maybe if French people lowered their dietary saturated fat and therefore cholesterol and drank the wine, they'd be even healthier.

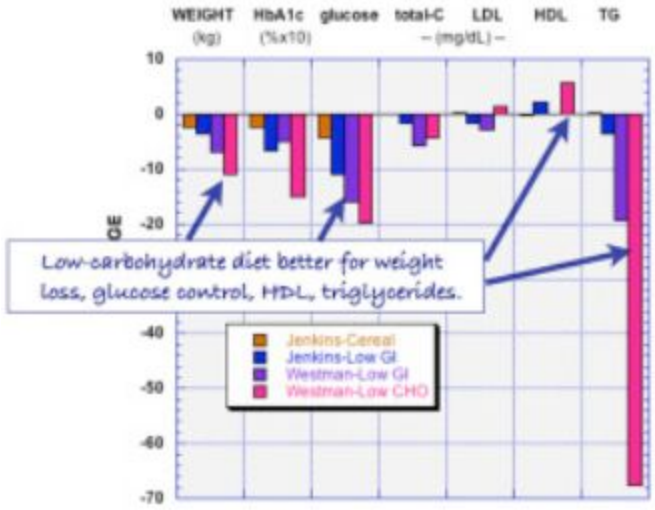
Well, a 1989 paper tracking the mortality rates of 92 elderly women in a nursing home in Paris found that rate of death was **5.2 times higher** in those with the lowest cholesterol.



But we know total cholesterol is somewhat outdated, and now the concern is about LDL - the so called “bad” cholesterol.

As shown in a review written by multiple doctors in departments like Cell Biology, Chemistry, Endocrinology and Nutrition science, compared to other diets, when you go on a low carbohydrate diet, many biomarkers improve: your weight goes down, your hemoglobin A1c goes down, glucose is down, triglycerides are way down, but this small increase in LDL may have some people worrying.

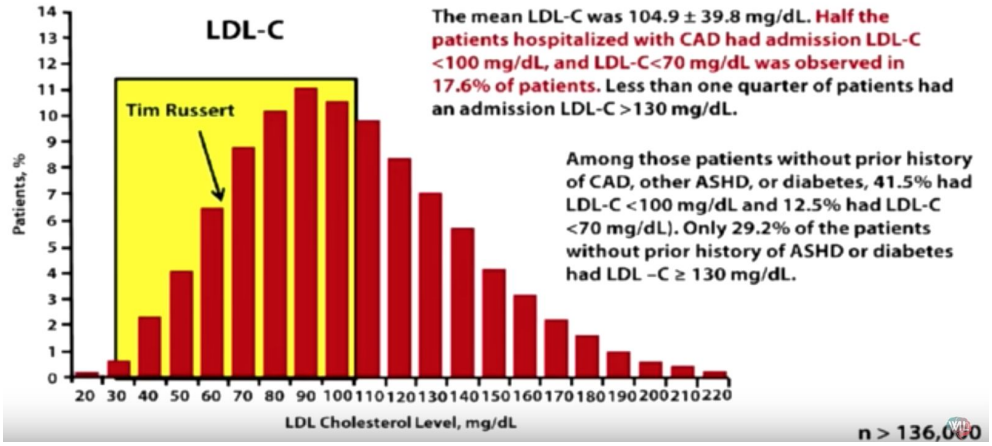
When people talk about “good” and “bad” cholesterol, they are referring to the same substance - the difference is the lipoprotein that the cholesterol is carried in. The cholesterol being carried by LDL - a low density lipoprotein is thought to be the “bad” cholesterol.



Low carbohydrate diets are better than low-GI diets or high cereal diets for weight loss, HbA1c, triglycerides and HDL. Data from Westman, *et al* (2008) *Nutr Metab (Lond)*, 5 (36). and Jenkins, *et al* (2008), *JAMA* **300**: 2742-2753.

In this talk by Peter Attia, he explains: "*We were taught that LDL cholesterol is the big risk, right? If your LDL cholesterol is high, you are at risk for heart disease, and yet, we're seeing that some of the time that turns out to be patently false. This is a study that looked at 136,000 patients*

admitted to the hospital for a coronary artery event and in these patients they looked at LDL cholesterol level and you can see that nearly 50% of them had what you would consider a low LDL cholesterol level."



Our bodies of course don't make LDL for the sole purpose of giving us heart attacks. As Dr. Tomohito Hamazaki explains, "*LDL particles provide the important nutrients of lipid soluble antioxidants and triglycerides to blood vessels as well as provide the cholesterol necessary for blood vessel repair."* [Source:
Fat and Cholesterol Don't Cause Heart Attacks and Statins Are Not The Solution. Columbus Publishing Ltd. - Chapter 8]

There are various types of lipoproteins with varying densities, but many scientists believe oxidized cholesterol to be the real problem as it initiates the process leading to the buildup of plaque in the arteries. So how do they become oxidized?

One way is, ironically, through the effects of consuming so called "heart healthy" vegetable oils.

The problem with the polyunsaturated fatty acids in vegetable oils is that because of their structure, they are unstable. Meaning, when exposed to

oxygen or heat, they can form toxic byproducts and free radicals. Free radicals which can oxidize cholesterol and thus lead to heart disease.

So when you heat vegetable oils, free radicals as well as small lipid fragments called aldehydes can form. Aldehydes are well known to be toxic - you may be familiar with formaldehyde, for example. A hangover is suspected to be the result of alcohol being metabolized into *acet***aldehyde.**

For example, It's been confirmed that aldehydes form in the vegetable oils sunflower and soybean oil at 185 degrees celsius. in sunflower oil at 180 degrees celsius and 185 degrees in soybean oil. This has big implications for fried foods - commonly fried in vegetable oils.

Research by Martin Grootveld, a professor of bioanalytical chemistry and chemical pathology, showed that "a typical meal of fish and chips", fried in vegetable oil, contained as much as 100 to 200 times more toxic aldehydes than the WHO safe daily limit. In contrast, heating up butter, olive oil, coconut oil and lard in tests produced far lower levels of aldehydes. Maybe McDonald's ought to switch back to making their fries in beef tallow, as they did before the early 90's.

But, vegetable oils, for example corn oil, do an excellent job of lowering cholesterol. We've known this since the 1960's. Here's Dr. David Diamond explaining a study on this from 1965: [Clip - *Link should start at 25:10, ends at 27:20.*]

Another tragic consequence of replacing saturated fats with polyunsaturated vegetable oils is losing out on the heart protective effects of the fat soluble Vitamin K2 found in animal fats. (**Vitamin K2 is also found in fermented foods like Natto*) The importance of vitamin K2 in heart health is shown by research on vitamin K2-dependent reactions. For example, γ-carboxylation, requires vitamin K as a cofactor. And, if the glutamic acid residues of gla-containing proteins are not carboxylated, calcium cannot be

properly bound. You don't need to remember all that, but it simply means that Vitamin K2 is necessary to take the calcium out of your heart and put it into your bones.[Source:
Fat and Cholesterol Don't Cause Heart Attacks and Statins Are Not The Solution. Columbus Publishing Ltd. - Chapter 5]
Calcium deposition in the vascular system is a consistent feature of heart disease.

Vitamin K2, also known as menaquinone is rich in beef, milk and cheese. Interestingly, as this 2004 paper shows, vitamin K2 intake reduced mortality rates from heart disease and all causes, but vitamin K1 (found in soybean and canola oil) did not. (**Polyunsaturated fatty acid rich oils are not as effective for absorbing Vitamin K_2*)

And, more recently we're getting headlines like this:

Replacing butter with vegetable oils does not cut heart disease risk

Butter might not be a health food, but researchers unearthed more evidence that replacing it with vegetable oils does not decrease risk of heart disease

Date:	April 12, 2016
Source:	University of North Carolina Health Care
Summary:	New research of old data suggests that using vegetable oils high in linoleic acid failed to reduce heart disease and overall mortality even though the intervention reduced cholesterol levels. And researchers found that consuming vegetable oils might actually be worse for heart health than eating butter.

Let's take a brief moment to review how our eating patterns have changed following dietary recommendations.

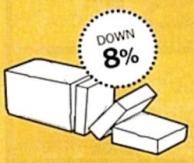
Since 1970, we've gotten fewer calories from these foods:

Whole milk
One cup contains 5 g of saturated fat—23% of the USDA allowance

Refined white sugar
Our food hasn't gotten less sweet, but corn-based sugars have surged

Beef
Americans began eschewing red meat in favor of lower-fat options like chicken

Eggs
Yolks contain cholesterol, which experts thought could raise LDL in blood



Butter
It was replaced in part by margarine, which has proved much less healthy

Vegetables
The hope that Americans would switch from fat to veggies didn't pan out

But we're getting a whole lot more calories from these:

High-fructose corn syrup
Corn subsidies have helped make this sweetener cheap—and very widespread

Corn products
This staple crop has become the base of the American diet

Skim milk
Low-fat milk is often accompanied with sweeteners like chocolate

Chicken
Leaner poultry is neck-and-neck with beef as the most popular meat

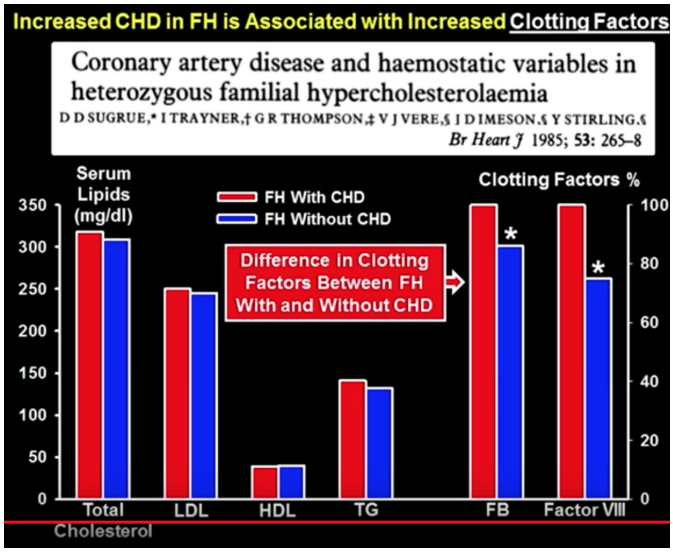
Turkey
Low in fat, turkey is also low in vitamins and cholesterol

Added fats and oils
Polyunsaturated fats, like corn oil, are widely used in processed foods

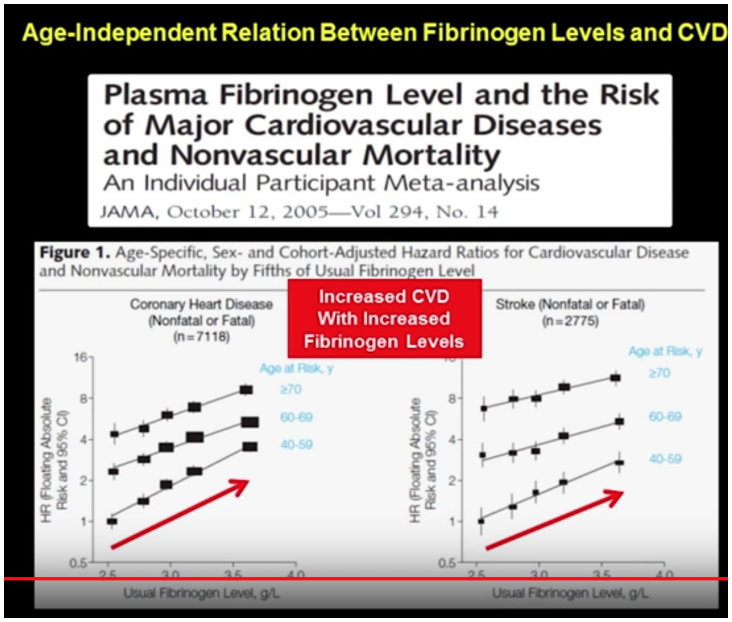
Less Whole Milk, More Skim Milk, A little less butter, Way more polyunsaturated oils, Less eggs and Beef, and More lean Chicken and Turkey. Top it off with a gigantic increase in sweet syrup.

You might still be wondering, "*if it's not the cholesterol, then what causes heart disease?"*

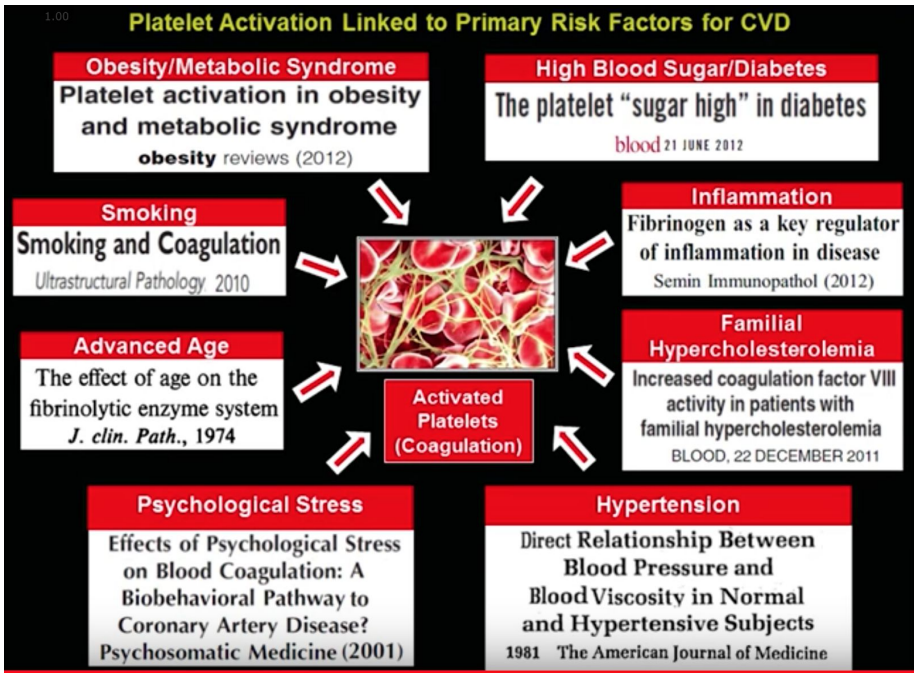
Let's take a look at a study of patients that have a condition called "familial hypercholesterolaemia" that causes them to have abnormally high cholesterol. We're supposed to keep our LDL below 100 to be healthy, but in these people, it was nearing ***250***.Interestingly, a portion of them had heart disease and the others did not. There's no significant difference between total cholesterol, or the so called good or bad cholesterols. So what *was* different? **Clotting factors**. Those diagnosed with heart disease had significantly greater baseline clotting factors- one is called factor eight, the other is fibrinogen and factor eight.



Here's a study showing that Cardiovascular disease clearly increases with an increase in the clotting factor fibrinogen.



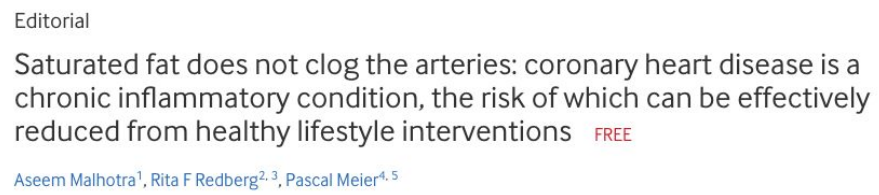
As Dr. David Diamond Points out: if we take a look at the primary risk factors for heart disease: Obesity, Diabetes i.e. High Blood Sugar, Smoking, Aging, Inflammation, Stress and Hypertension, these are all linked to platelet activation and clotting.



The point I want to make is that at the very least, there are much better places to look than cholesterol in trying to prevent heart disease.
For example, Dr. Mann Kummerow suspected trans-fats to be the problem. Among other unhealthy effects, trans fats inhibit Vitamin K2 dependent processes, promoting calcium build up in the heart.

-Biochemist and two time Nobel Prize Winner Linus Pauling suspected Vitamin C deficiency to play a role as low Vitamin C stimulates the production of the heart disease promoting Lipoprotein (a).

-Chronic inflammation is another big suspect.


Editorial

Saturated fat does not clog the arteries: coronary heart disease is a chronic inflammatory condition, the risk of which can be effectively reduced from healthy lifestyle interventions FREE

Aseem Malhotra[1], Rita F Redberg[2, 3], Pascal Meier[4, 5]

There are many factors that play into this very complex condition, and more and more data is showing that saturated fat in the context of a low carbohydrate diet is not one of them.

Despite some data like this on 1998 Europe suggesting that *more* saturated fat results in *less* heart disease, the theory that saturated fat causes heart disease has prevailed for quite a while and radically changed the way we eat.

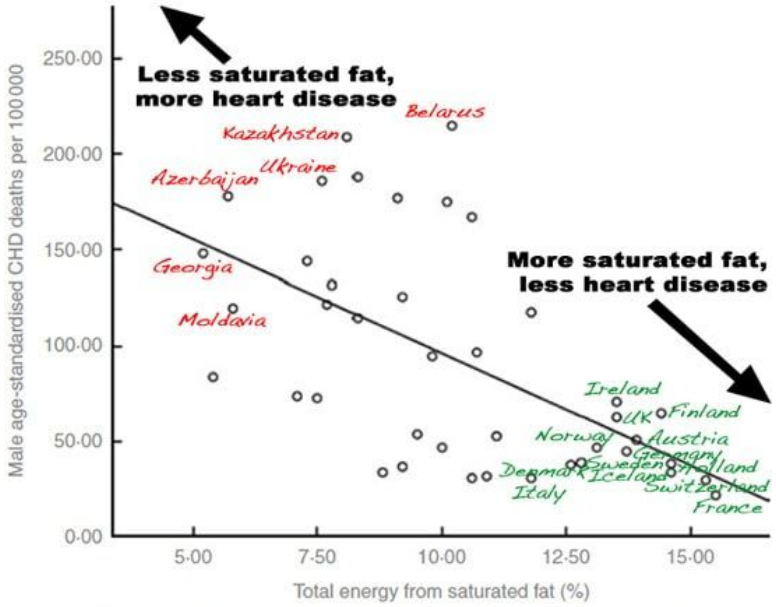


Fig. 1. Saturated fat intake and CHD mortality in Europe (1998). R^2 inear = 0·339.

The logic of the theory is simple to follow: because Cholesterol is found in arterial plaques and saturated fat increases cholesterol, saturated fat must cause heart disease. But, as Journalist H.L. Mencken famously said '*For every complex problem, there is an answer that is clear, simple, and wrong.*'