

# Slate

medical examiner

## End the War on Fat

It could be making us sicker.

By Melinda Wenner Moyer

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Thirty years ago, America declared war against fat. The inaugural edition of *Dietary Guidelines for Americans*, published in 1980 and subsequently updated every five years, advised people to steer clear of "too much fat, saturated fat, and cholesterol," because of purported ties between fat intake and heart disease. The message has remained essentially the same ever since, with current guidelines recommending that Americans consume less than 10 percent of their daily calories from saturated fat.

But heart disease continues to devastate the country, and, as you may have noticed, we certainly haven't gotten any thinner. Ultimately, that's because fat should never have been our enemy. The big question is whether the 2010 *Dietary Guidelines*, due out at the end of the year, will finally announce retreat.

The foundation for the "fat is bad" mantra comes from the following logic: Since saturated fat is known to increase blood levels of "bad" LDL cholesterol, and people with high LDL cholesterol are more likely to develop heart disease, saturated fat must increase heart disease risk. If A equals B and B equals C, then A must equal C.

Well, no. With this extrapolation, scientists and policymakers made a grave miscalculation: They assumed that all LDL cholesterol is the same and that all of it is bad. A spate of recent research is now overturning this fallacy and raising major questions about the wisdom of avoiding fat, especially considering that the food Americans have been replacing fat with—processed carbohydrates—could be far worse for heart health.

Last year, Ronald Krauss, director of atherosclerosis research at the Children's Hospital Oakland Research Institute, teamed up with researchers in Sweden to tease out some of the more nuanced characteristics of LDL cholesterol and its role in heart health. The term "LDL cholesterol" refers to the cholesterol housed in low-density lipoprotein particles, and these particles come in a range

of sizes. Krauss and his colleagues analyzed the LDL particles they found in blood samples taken a dozen years earlier from 4,600 Swedish men and women and discovered that concentrations of the small- and medium-sized LDL particles best predicted whether the subjects later developed heart disease. Larger LDL particles, they noted in their [study](#), which was published in *Arteriosclerosis, Thrombosis, and Vascular Biology*, were essentially neutral with regard to the subjects' heart health.

This finding is particularly interesting in light of [what Krauss had uncovered years earlier](#): Men who switch from a low-saturated-fat diet to one high in saturated fat experience an increase in total blood LDL cholesterol, as expected. But the change is mostly the result of a spike in the concentration of large LDL particles, not small. In other words, saturated fat consumption typically boosts the number of particles that Krauss has shown to be harmless.

Blood tests for LDL cholesterol might not even be a dependable indicator of your risk of heart disease. Take, for instance, the infamous [Women's Health Initiative hormone trials](#). Though women on hormone replacement therapy experienced overall drops in LDL cholesterol, they did not suffer fewer heart attacks. The finding initially baffled trial investigators, but further analysis revealed that the women's LDL particle concentrations had remained exactly the same. Recently, researchers including James Otvos, a biochemist at North Carolina State University, [have reported](#) that cholesterol tests—the kind most doctors administer—accurately predict heart disease risk only about 70 percent of the time, because they ignore particle size. (Otvos' company, LipoScience, plans to start selling particle-based cholesterol tests to doctors' offices later this year.)

LDL particles are not the only factor in fat's exoneration. Large population-based studies are, too. A [2006 study](#) published in the *New England Journal of Medicine*, based on data collected from 82,802 women, found that the subjects who consumed the highest percentage of their daily calories from fat (including saturated fat) did not experience an increased risk of developing heart disease later in life. In fact, women who ate the highest amounts of vegetable fat—from foods like olive oil and nuts—had lower risks of heart disease than women on low-fat diets. A [meta-analysis co-authored by Krauss](#) and published in the March 2010 *American Journal of Clinical Nutrition* compared the reported food intakes of nearly 350,000 men and women with their cardiovascular health years later and also found no connection between saturated fat intake and heart or vascular disease.

Ultimately, saturated fat—named because it contains no double bonds, so all of its carbon atoms are saturated with hydrogen atoms—may be neutral for the heart. Meanwhile, some mono-unsaturated fats (which have one double-bond and are found in many nuts) and some poly-unsaturated fats (which have multiple double bonds and are found in fatty fish) could be good for the heart. For instance, a meta-analysis published in *PLoS Medicine* this month reports that the substitution of polyunsaturated fat for saturated fat can cut heart disease risk.

If saturated fat doesn't adversely affect cardiovascular health, what does? Sorry, Nabisco: We

should be giving a closer look to foods with a high glycemic index—a measure that reflects a food's influence on blood sugar levels, based on how quickly it is digested and absorbed. Typically, that means carbohydrates like cereal, bread, chips, and cookies.

In [a 2000 study](#) in the *American Journal of Clinical Nutrition*, Harvard researchers compared the food intakes of 75,521 women with their health over the course of a decade and found that the quintile of women who ate food with the highest glycemic load—a measure that incorporates portion size—had twice the risk of developing heart disease than the quintile who ate food with the lowest glycemic load. A [2008 meta-analysis](#) of 37 studies reported a significant association between intake of high glycemic index foods and increased risk of type 2 diabetes, heart disease, gallbladder disease, and breast cancer. Some studies [suggest](#), however, that the bad effects of high-G.I. foods can be tempered by pairing them with low-G.I. foods. For instance, a piece of white bread smeared with peanut butter may be healthier than a piece of white bread alone.

The link between carbohydrates and heart disease is also supported by LDL particle data. In [a 2008 study](#) published in *Nutrition Research*, researchers reported that subjects who followed high-fat, low-carb diets for eight weeks experienced a 46 percent drop in blood concentrations of small LDL particles, while those who followed a high-carb, low-fat diet experienced a 36 percent spike in them. What's more, processed carbohydrates lower "good" HDL cholesterol, whereas saturated fat increases it.

Just as different fats affect the body in dissimilar ways, it seems that sugars are not all created equal. Though fructose actually has a lower glycemic index, it may be a bit less healthy than glucose, a sugar with the same chemical formula but a different structure. (Sucrose, or table sugar, is 50 percent glucose and 50 percent fructose; high-fructose corn syrup is typically 55 percent fructose and 45 percent glucose.) [Research published](#) by Peter Havel, a professor of nutrition at the University of California-Davis, suggests that compared with glucose, fructose incites less of an insulin response, which ultimately results in lower circulating levels of the appetite-suppressing hormone leptin and higher levels of the appetite-boosting hormone ghrelin—so fructose may make you hungrier.

It could also put you at greater risk of heart disease and diabetes. When overweight people supplemented their diets with drinks sweetened either with fructose or with glucose for 10 weeks, fructose drinkers ended up with [higher concentrations of small LDL particles](#) in their blood after they ate. They also experienced, on average, a 20 percent drop in insulin sensitivity—low insulin sensitivity is a risk factor for type 2 diabetes—over the course of the experiment compared with the glucose drinkers. (Havel believes that the glycemic index is ultimately flawed and that a "fructose index" might be a better nutrition metric.)

In any case, it seems that processed carbohydrates are America's most deserving nutritional enemy. And our misguided war against fat has just made us more addicted to them, because when people cut out fat, they typically turn to "diet" foods high in carbs—SnackWells, Baked Lays,

even low-fat Jif, which contains the same number of calories as the regular version, with less peanut butter and more "corn syrup solids." That's not to say that all carbs are bad; fiber is a carbohydrate, and an important one. And there is still a lot left to be desired about certain fats. Trans fats really *are* bad for you, and foods very high in omega-6 polyunsaturated fats—such as corn oil and margarine—are not particularly healthy, either. But overall, Americans could stand to start replacing carbs with fat. More bacon, fewer Bacos.

Will this new research on fat and carbs will be reflected in the 2010 *Dietary Guidelines*?

According to Meir Stampfer, a Harvard professor of nutrition and epidemiology who worked on the 2000 guidelines, scientists on this year's committee know perfectly well what the evidence says. But few researchers want to shake the status quo or risk confusing the public. Robert Post, deputy director of the U.S. Department of Agriculture Center for Nutrition Policy and Promotion, admits that when it comes to nutritional recommendations, "simple messages, few messages, targeted messages, are very important." Ultimately, then, policymakers have to choose between keeping the message consistent and actually getting it right.

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