The Washington Post

Wonkblog

For decades, the government steered millions away from whole milk. Was that wrong?

By Peter Whoriskey October 6, 2015

U.S. dietary guidelines have long recommended that people steer clear of whole milk, and for decades, Americans have obeyed. Whole milk sales shrunk. It was banned from school lunch programs. Purchases of low-fat dairy climbed.

“Replace whole milk and full-fat milk products with fat-free or low-fat choices,” says the Dietary Guidelines for Americans, the federal government's influential advice book, citing the role of dairy fat in heart disease.

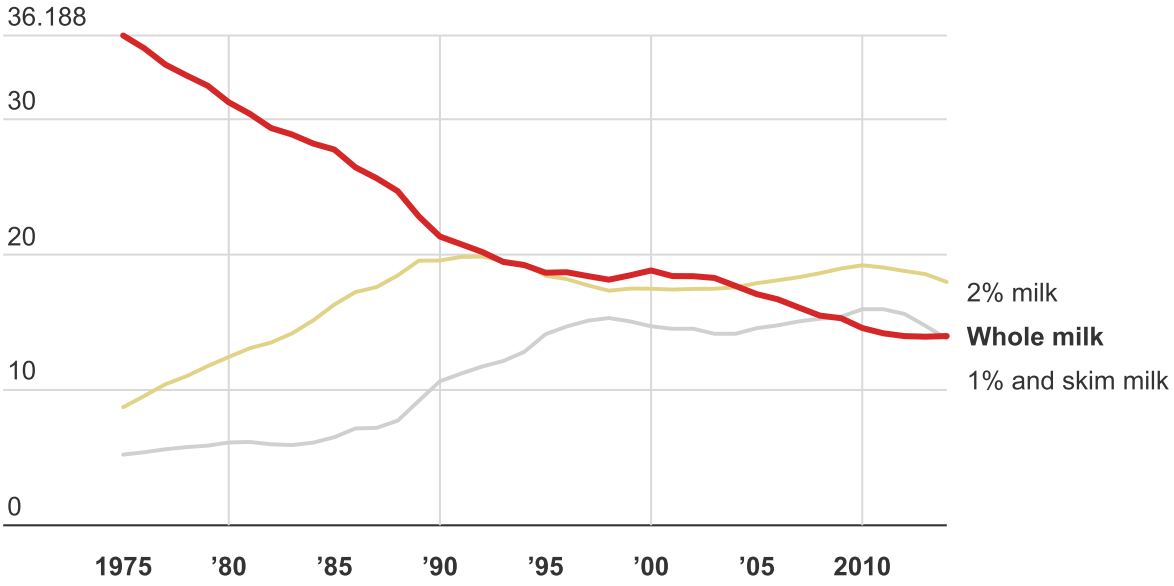
Whether this massive shift in eating habits has made anyone healthier is an open question among scientists, however. In fact, research published in recent years indicates that the opposite might be true: millions might have been better off had they stuck with whole milk.

Scientists who tallied diet and health records for several thousand patients over ten years found, for example, that contrary to the government advice, people who consumed more milk fat had *lower* incidence of heart disease.

By warning people against full-fat dairy foods, the United States is “losing a huge opportunity for the prevention of disease,” said Marcia Otto, an assistant professor of epidemiology at the University of Texas and the lead author of large studies published in 2012 and 2013, which were funded by government and academic institutions, not the industry. “What we have learned over the last decade is that certain foods that are high in fat seem to be beneficial.”

Over decades, consumers spurned whole milk

For decades, public health authorities have advised Americans to switch away from whole milk, and they have obeyed. The chart shows sales of milk in millions of pounds.



Source: USDA

The Washington Post

This year, as the “Dietary Guidelines for Americans” undergoes one of its periodic updates, the federal bureaucrats writing them must confront what may be the most controversial and weighty question in all of nutrition: does the consumption of so-called saturated fats -- the ones characteristic of meat and dairy products -- contribute to heart disease?

It is, without doubt, an important question. Heart disease is the leading cause of mortality in the United States, and the federal government has long blamed saturated fats.

[Whole milk is okay. Butter and eggs too. What's next -- bacon?]

But the idea that spurning saturated fat will, by itself, make people healthier has never been fully proven, and in recent years repeated clinical trials and large-scale observational studies have produced evidence to the contrary.

After all the decades of research, it is possible that the key lesson on fats is two-fold. Cutting saturated fats from diets, and replacing them with carbohydrates, as is often done, likely will not reduce heart disease risk. But cutting saturated fats and replacing them with unsaturated fats -- the type of fats characteristic of fish, nuts and vegetable oils -- might.

This shift in understanding has led to accusations that the Dietary Guidelines harmed those people who for years avoided fats -- as instructed -- and loaded up excessively on the carbohydrates in foods such as breads, cookies and cakes that were marketed as "low fat."

It also has raised questions about the scientific foundations of the government’s diet advice: To what extent did the federal government, and the diet scientists they relied upon, go wrong? When the evidence is incomplete on a dietary question, should the government refrain from making recommendations?

The dietary science has drawn the skepticism of some on Capitol Hill. On Wednesday, a House committee will air concerns regarding the evidence for the guidelines with Agriculture Secretary Tom Vilsack and Health and Human Services Secretary Sylvia Burwell.

[Read: Could 95 percent of the world's people be wrong about salt?]

The Dietary Guidelines have stepped back slightly from their blanket advice to reduce saturated fats, adding the caveat that saturated fats ought to be replaced with unsaturated fats. But Dariush Mozaffarian, a cardiologist, epidemiologist, and dean of the Friedman School of Nutrition Science & Policy at Tufts University said that in his view the Dietary Guidelines have yet to retreat far enough from the idea that saturated fat is a dietary evil, and their suspicion of whole milk is a good example. Judging a particular food solely on how much fat it contains, he said, can too easily blind people to its other benefits.

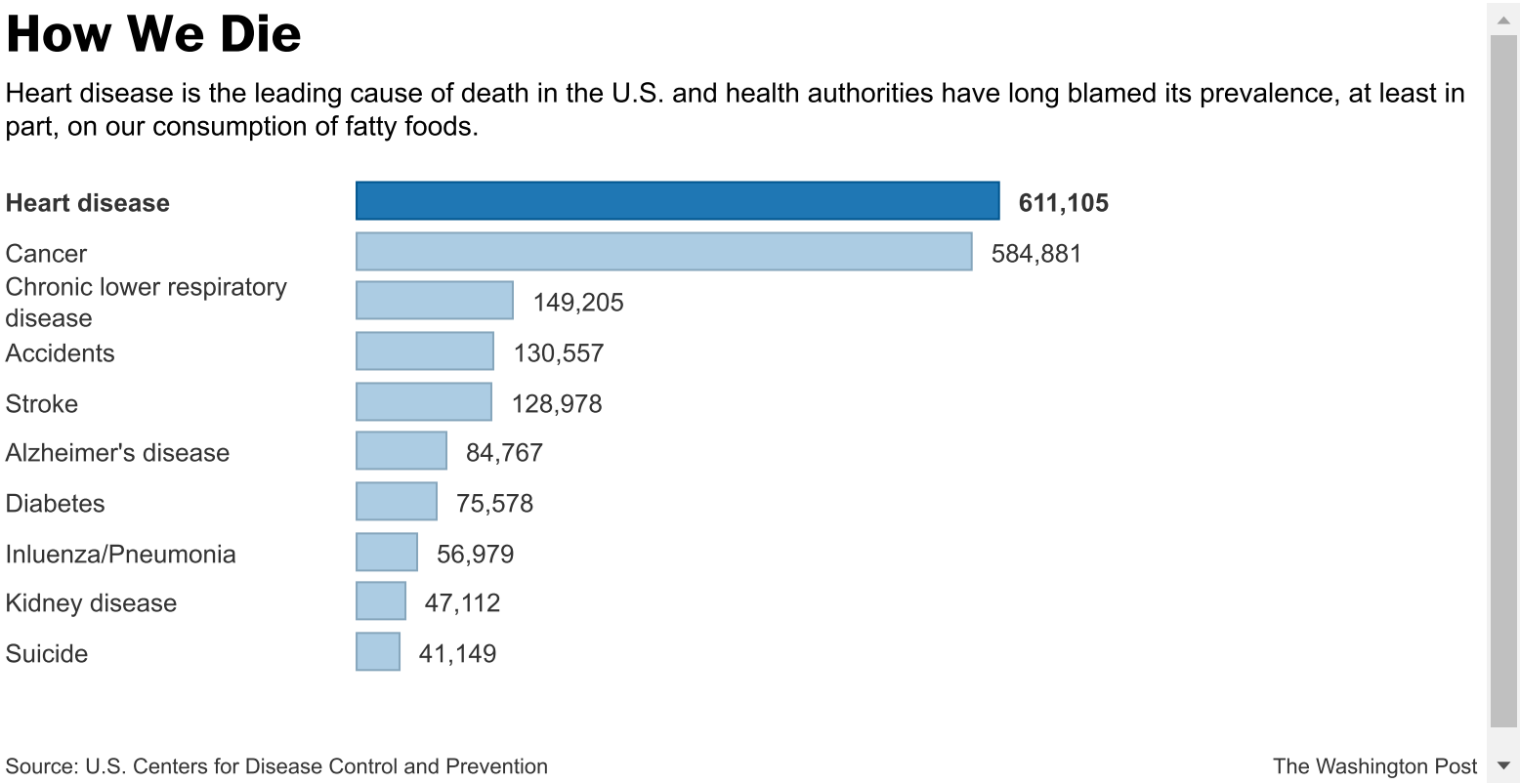
“If we are going to make recommendations to the public about what to eat, we should be pretty darn sure they’re right and won't cause harm,” Mozaffarian said. “There's no evidence that the reduction of saturated fats should be a priority."

Some, including representatives of the American Heart Association, disagree. In their view, the evidence for the dangers of saturated fats arises from these two ideas: Consuming saturated fats raises levels of so-called “bad” cholesterol in the blood, and higher levels of “bad” cholesterol, in turn, raise risks of heart disease.

[Related -- USDA: We will not steer people away from meat to protect the environment]

In support of their position, they point to the trials of statin drugs, which show that the drugs lower “bad” cholesterol levels and lower risks of heart disease.

There is a “mountain of evidence” explaining how consumption of saturated fats raises the risk of heart disease, said Penny Kris-Etherton, a nutrition professor at Penn State University and a former member of the Dietary Guidelines advisory committee.



The case against saturated fats begins

Over the long tortured course of fat research, it certainly seemed at times that there was strong evidence in the case against saturated fats.

The history of the fat warning is usually traced to the work of Ancel Keys, a scientist at the University of Minnesota, whose study of heart disease in the 1950s startled the medical world.

Keys examined fat consumption and rates of heart disease in various countries. In places where people eat lots of fat, he found high levels of heart disease. One of his famous charts, from 1953, showed that in the United States, where close to 40 percent of the diet came from fat, people suffered a disproportionate number of heart disease deaths. People in Japan and Italy, by contrast, consumed less fat and died of heart disease less often.

To Keys, the data offered proof that Americans could improve their health by reducing the fats in their diets.

"It is now abundantly clear that degenerative heart disease is not an inevitable consequence of aging," he wrote in the 1953 medical journal article.

More evidence was coming. In the '60s, several clinical trials -- from Oslo, Los Angeles, Finland, London and Minnesota -- put his suspicion to the test. Three of the five suggested that he was right.

The Oslo study, for example, studied 412 men who'd previously had a heart attack. Half were given a special diet that was low in saturated fat; the other half was allowed to eat their usual diet, which was richer in saturated and trans fats. The special diet

seemed to work: After five years, 64 subjects on the special diet had a relapse of heart disease, while of those eating their regular diet, 90 people did.

Public health authorities, including those in the United States, were soon recommending that people reduce their consumption of saturated fats -- meat, eggs and dairy -- as a means of lowering heart disease risks.

The idea became a part of U.S. official advice in 1977, when the U.S. Dietary Goals, a forerunner of the Dietary Guidelines, embraced the position.

How a hypothesis became dogma

But even as a Senate committee was developing the Dietary Goals, some experts were lamenting that the case against saturated fats, though thinly supported, was being presented as if it were a sure thing.

“The vibrant certainty of scientists claiming to be authorities on these matters is disturbing,” George V. Mann, a biochemist at Vanderbilt’s medical school wrote in the New England Journal of Medicine.

Ambitious scientists and food companies, he said, had “transformed [a] fragile hypothesis into treatment dogma.”

Indeed, the subsequent 40 years of science have proven that, if nothing else, the warning against saturated fats was simplistic.

By itself, cutting saturated fats appears to do little to reduce heart disease. Several evidence reviews -- essentially summing up years of research -- have found no link.

“There is no significant evidence for concluding that dietary saturated fat is associated with an increased risk of coronary heart disease,” said one published in 2010 in the American Journal of Clinical Nutrition.

“Current evidence does not clearly support” guidelines linking saturated fat and heart disease, according to a review of experiments and observational studies published in the Annals of Internal Medicine.

“Saturated fats are not associated” with mortality, heart disease, strokes or type 2 diabetes, a major review in the British Medical Journal reported in July.

One of the most noted experiments on fats was the Women's Health Initiative, which involved more than 48,000 older women. Some had counseling to eat less fat and more vegetables and fruits; others continued, more or less, with their normal diets. Subjects in the diet group cut their saturated fat intake from 13 percent of their diet to 10 percent, as well as their consumption of other fats. Their levels of "bad" cholesterol dropped. Yet when it came to heart disease, researchers found no significant difference between the two groups.

To many critics, the trouble with the fat warning was not merely academic.

The “campaign to reduce fat in the diet has had some pretty disastrous consequences,” Walter Willett, dean of the nutrition department at the Harvard School of Public Health has said. “With more fat-free products than ever, Americans got fatter.”

Best-sellers such as "Good Calories, Bad Calories" by Gary Taubes and "Big Fat Surprise" by Nina Teicholz went further in their critique of the government position.

"There's a large body of scientific literature to show that a high-carb diet, as recommended by the Dietary Guidelines for Americans, provokes a number of heart-disease risk factors," said Teicholz, whose critique of the guidelines appears in a recent issue of the British Medical Journal.

The case weakens

For the bureaucrats writing the forthcoming Dietary Guidelines, the shifting evidence against saturated fats may be a lesson, experts said: there were weaknesses in each of the three lines of evidence used.

First, there were those studies by Keys showing that a country's fat consumption was linked to its rate of heart disease. After Keys' paper appeared, scientists began adding other countries to his graph, and when they did, the pattern suggesting a link between fat consumption and heart disease became less distinct.

More importantly, by the very nature of his research, Keys' data could only show that saturated fat consumption was *associated* with heart disease, not that consuming saturated fat *caused* heart disease. That’s because his study was “observational” -- that is, it was based on merely observing subjects rather than randomly assigning them to high-fat and low-fat diets. It was possible, in other words, that some unaccounted factor caused the varying rates of heart disease.

The second line of evidence in the case against saturated fats came from those controlled experiments in the '60s -- in Oslo, Finland and Los Angeles. These suggested that subjects who consumed less saturated fat suffered less from heart disease.

As further scientific review showed, none of the experiments was perfectly designed to assess the danger of saturated fats, and the results in some cases were modest. Moreover, the diets showing a benefit were not just low in saturated fats, they were also high in unsaturated fats -- the ones common in fish, nuts and vegetable oil.

Indeed, these trials, along with more recent studies, have led many scientists to conclude that merely cutting back on saturated fats provides no benefit, but replacing them with unsaturated fats does. By contrast, cutting back on saturated fats and eating breads and cookies instead won't help.

“We have strong evidence that replacing saturated fats with carbohydrates has no effect on cardiovascular disease,” said Alice Lichtenstein, a Tufts University nutritionist who served this year on the Dietary Guidelines advisory panel.

No more "blanket recommendations"

Even so, the advisory panel has continued to tout the benefits of limiting saturated fat to 10 percent of the diet, and of swapping whole milk for fat-free.

In doing so, the panel is relying on the third piece of the argument against saturated fats, which is that two-step chain of logic: that saturated fats raise the levels of "bad" cholesterol in the blood, and that higher levels of "bad" cholesterol in turn raise the risks of heart disease.

Scientists generally agree on the premises of that argument. The trouble, according to critics, is that connecting the two and drawing the conclusion that saturated fats lead to heart disease is a vast oversimplification, for a handful of reasons.

First, while consumption of saturated fats tends to raise levels of "bad" cholesterol in the blood, they also tend to raise the levels of "good" cholesterol levels, too, and that may have compensating effects.

Second, saturated fatty acids come in chains of carbon of varying lengths, and each one differs in its effects on heart disease risks. Some molecules appear to raise the amount of "bad" cholesterol in the bloodstream, while other longer chains appear to have no appreciable effect.

And it gets even more complicated. It turns out that "bad" cholesterol comes in two forms. One consists of particles that are smaller and denser and these appear to be strongly linked to heart disease; the other type of "bad" cholesterol consists of lighter, fluffier particles that appear to have lesser effects on heart disease. Saturated fats do raise the levels of "bad" cholesterol, but seem to produce mainly the lighter, fluffier and less dangerous particles.

As a result of such complexity, as well as the ways in which food sources vary in their health effects, "blanket recommendations to reduce total saturated fats may not be appropriate," according to the most recent Annual Review of Nutrition, an academic publication that provides summaries of the latest research.

So what about whole milk?

While nutrition advice is often presented in terms of "macronutrients" -- fats, proteins, carbohydrates -- foods may be more than the sum of their scientific parts.

Milk is a good example.

Repeated research on milk, not funded by the industry but by public institutions, has provided evidence that the fats in milk are, for some reason, different.

In 2013, New Zealand researchers led by Jocelyne R. Benatar collected the results of nine randomized controlled trials on dairy products. In tallying the tests on 702 subjects, researchers could detect no significant connection between consuming more dairy fat and levels of "bad" cholesterol. (Four of the nine studies included in the tally were funded by the industry. Those results were consistent with those of the trials funded by government entities.)

The same year, Otto and Mozaffarian, then both at the Harvard School of Public Health, conducted another study on the effects of milk. Their study sought to address a key weakness in the previous research.

One of the flaws of nutrition studies is that they rely on people to accurately recall what they've eaten over the course of a year. Those recollections are vulnerable to inaccuracy, especially for dairy fats which can be found in small amounts in many different foods. This inaccuracy may be one of the reasons studies have yielded contrary results on the link between milk and heart disease.

To improve estimates, Otto and Mozaffarian used a blood sample for each of more than 2,800 U.S. adults. Using the blood sample, they could detect how much dairy fats each had consumed. And over the eight-year follow up period, those who had consumed the most dairy fat were far less likely to develop heart disease compared to those who had consumed the least.

The advocates of whole milk allow that it has more calories than its low fat cousins, and for some, that might be reason to avoid it. But the traditional case against whole milk -- based on the risk of heart disease -- has frayed enough now that many argue the Dietary Guidelines should yield to the new findings.

"There is no scientific basis for current dietary advice regarding dairy," Benatar said. "Fears [about whole milk] are not supported by evidence. The message that it is okay to have whole fat food, including whole fat milk, is slowly seeping into consciousness. But there is always a lag between evidence and changes in attitude."

Peter Whoriskey is a staff writer for The Washington Post handling projects in business, healthcare and health. You can email him at peter.whoriskey@washpost.com. Follow @PeterWhoriskey