

RANDAL J. Hello. My name is Dr. Randal Thomas. I'm the director of the Cardiovascular Health Clinic here at the Mayo Clinic.

THOMAS: I'm going to speak to you today about Preventive Cardiology Mythbusters. I have no disclosures. And the things that I would like to cover today are two-fold. Number one, to review myths in medical care, the history of myths in medical care briefly, and then also to cover some current myths in preventive cardiology.

To begin with, I'd like to present a case. This is a 45-year-old male, who comes into the office for a visit. His father had a heart attack at age 52. He's worried, of course, that he might be at risk. And so he brings with him a list of things that he's found on the internet, that he thinks might help him prevent heart disease. He wants to know if they are a fact or fiction?

This is a very common thing that we'll see sometimes in our patients as they come in for advice. And there are a number of different things that we should consider as we think about myths, and particularly preventive cardiology myths. We want to make sure that we can separate the facts, such as what happened with penicillin, a miracle drug, versus fiction, which we sometimes will see, as this slide shows.

So as we look back in the history of myths, it's a very common scenario where people come up with certain treatments or advice that end up being myths instead of facts. They're based on unknown half-truths or even falsehoods that lack strong evidence and scientific evidence. They may be accepted as fact by some people, even though they lack strong evidence.

They could be perpetuated in society to become common. They come from a variety of sources. And most often they come from motives that are very honest, people that want to help others. Unfortunately, the evidence is not always there that it provides help.

Here are some examples of innocent and potentially dangerous myths. Innocent ones would be including feed a cold, starve a fever; swallow chewing gum and it stays in your system for seven years; drinking eight glasses of water per day improves overall health. These are all innocent, but unfortunately myths that have been perpetuated. Potentially dangerous ones might be were a patient comes in and they say I have seen that this treatment is a new, natural cure for x, y, or z. And unfortunately, many times patients then don't get the right treatments because they hear about a miracle cure that may not necessarily be a miracle cure.

What's interesting was a recent study in the *Mayo Clinic Proceedings* looked at common studies looking at standard medical care practices. And they found that in a large percentage of cases, in fact 40% of cases, the standard of care was actually reversed by the results of the studies. So even in our standard medical care practices what we're practicing may not be evidence-based all the time. It may be more myth than fact.

So there are a number of things in preventive cardiology that we could cover as far as myths go, and I hear these. Every week, I hear new ones. You probably do as well. We're going to cover today just myths from two of these areas. I'm going to focus just on a few very common ones for exercise and nutrition.

Under exercise, I'd like to cover the common myth that walking equals running. Is this fact or fiction? Let's examine the evidence.

Will walking one mile burn as many calories as running one mile? Is that true or not? If you look at the evidence, it's actually not true.

If you were to walk one mile at about three miles per hour, you would burn around 80 calories, for an average-sized person. If you run that mile in 6 miles per hour of pace, you would burn about 115 calories. So about a 40% increase in the number of calories you would burn if you run versus walk. So this statement is fiction.

Well, what about for risk factor control? Is walking and running, are they both the same? If you look at a study from two large groups of patients, or two large groups of people, the National Runners Survey and the National Walkers survey, looking at 6.2 years of follow-up of their data and looking at the onset of hypertension, high cholesterol, and diabetes, what they found was, although these curves-- or these bars-- may look different, statistically there was no significant difference between walking and running and risk of developing these risk factors, assuming that you have the same number of calories burned for walking versus running. So in other words, there was no significant difference in the onset of hypertension, high cholesterol, and diabetes in the walkers versus the runners if they burn the same number of calories. If you remember from the first point, since running burns more calories than walking, a walker would have to walk 1.4 miles, where the runner runs one mile, and they have the same level of benefit for preventing those risk factors.

So this is a fact. Although it's based on observational data, it still seems to be fairly good evidence.

If we look at a third item under walking versus running-- and that is what about the reduction of cardiovascular disease events? And studies, although somewhat mixed, in large part show that the higher intensity the activity, the better the result in reducing cardiovascular events. So in this case, walking versus running is not true. Walking is not as effective as running in lowering cardiovascular events.

This is just one example. And I know this may be hard to see in detail. But if you focus on the bottom part of the slide, and you go across from left to right, you'll see as you go up on the intensity of activity, there's an increasing benefit of reducing cardiovascular events as you get to higher intensity activity.

So fact or fiction? There's a little bit of a mixture on this item. Under caloric expenditure, this is fiction. Under reducing risk factors, it appears to be fact. But under CVD event reduction, this appears to be fiction.

A couple of quick myth busters under exercise. You may see these toning shoes around. Do they really work? Do they help you burn more calories than regular running shoes? No, they do not. Studies suggest that there's no significant improvement in calorie burning by using these less efficient shoes than just the regular shoes.

What about toning pants? You may have seen these around, maybe even have tried some. Do these help to burn more calories than regular clothing that you would wear with exercise? No, they don't.

There's a slight increase in burning calories. And the principal investigator of the study we looked at said that this is about like burning the equivalent of half a peanut M&M, so a very minimal effect.

Let's skip over to nutrition quickly and talk about one particular myth that has been perpetuated. That low-fat diets actually lower curve asterisks best, is this fact or fiction? Let's look at the evidence.

Just in review, Western, very low fat, high protein, and Mediterranean style dietary patterns are shown here with regards to their total fat, saturated fat, protein, and carbohydrate intake. So we're focusing on the low-fat diets that have a low total fat intake. Are they better than the other options in lowering cardiovascular risks?

Well if you look at the low-fat diets for CVD prevention, several randomized trials for both primary and secondary prevention have been carried out for the past several decades. And in reality, although there's some mixed results, most have shown either no effect, a weak effect, or lacked sufficient statistical power to show an effect.

On the other hand, if you look at the Mediterranean dietary pattern, there are two randomized studies, not perfect studies, but two randomized studies that have looked at this question for both primary and secondary prevention. In the primary prevention study, the PREDIMED Study looked at over 7,000 patients who were randomized to either a Mediterranean plus olive oil diet, Mediterranean plus nut diet, or a control diet. This was carried out in Spain. So even the control diet was probably somewhat a Mediterranean diet.

There was early termination because of significant improvement in the intervention groups. There was a 30% reduction in CVD events, particularly for stroke, but in the total conglomerate outcome measure of MI, stroke, and CVD death.

The PREDIMED results are shown here. And you can see a definite separation of the curves between the control and Mediterranean-style approaches for CVD events, a significant reduction. Total mortality was not significantly different, BUT CVD event reduction was different.

The Lyon Heart Study was a secondary prevention study carried out in France several years ago. And what they found was that when they randomized patients to either a Mediterranean-style diet or a "prudent diet," which was essentially a lower fat diet, not a very low-fat diet, but a lower fat diet, they studied the patients over five years after MI. And they stopped the study early at four years due to a favorable interim analysis for the intervention group. Here you can see the differences for primary, secondary, and tertiary outcomes, showing there's a definite benefit to this dietary approach in secondary prevention of CVD events for patients who are on the Mediterranean-style dietary pattern.

This is a meta-analysis fairly recently published, looking at risk factor control, where they compared low-fat diets versus a Mediterranean dietary pattern. And although you can't see the details on this slide, if you notice to the left of the bar, the black boxes suggest benefit to the Mediterranean-style pattern. To the right of the line would suggest benefit to the low-fat diet. And what this group of investigators found was as they analyzed the randomized controlled trials of low fat and Mediterranean-style approaches, the Mediterranean-style approach had better reduction in cardiovascular risk factors than the low-fat dietary pattern did.

We have not had a low fat versus Mediterranean diet randomized trial with head-to-head comparison. That would be nice to have. We still have not have had that up until now.

So does lower fat diet reduce cardiovascular risk best? This is probably not true based on current evidence. Lower saturated fat diets are best. But the best that we can see from the randomized controlled trials appears to be the Mediterranean-style approach.

Here's a couple of other quick myth busters. Does chocolate lower CVD risk? Is this a myth or is it fact? You might be glad to know that it is probably true. It's probably a fact. If you look at most of the randomized controlled trials of chocolate, cocoa, flavanols, and other similar products, they have found that either in dose-independent or dose-dependent fashions, several cardiovascular risk factors do improve with modest amounts of chocolate in the diet.

Here's another quick myth buster. Coconut oil or coconut milk lowers cardiovascular risk. This is a very popular one these days. If you look at the evidence that's available, the answer is probably no. This is probably fiction, probably a myth.

Coconut oil in milk is one of the highest products for saturated fat content that we can find that naturally occurs on the Earth. It has the ability to raise cholesterol levels. It may increase HDL levels. It may reduce weight or may help people reduce weight. But the studies on these facts have not really been well done. They're very small studies that have not clarified the answers. Based on current recommendations and current evidence, we would say that this is probably a myth.

So to summarize what we've looked at, the facts are that walking is similar to running with regards to reducing risk for certain cardiovascular risk factors. But on the other hand, the fiction or the myths that we covered include that walking and running are similar for caloric expenditure and for reducing cardiovascular events. Those points are myths and not fact.

And under nutrition, we covered the popular myth that low-fat diets are best based on current evidence. So we were able to identify this appears to be not true. But rather, a Mediterranean-style approach appears to have the stronger base on evidence for cardiovascular risk reduction.

So in summary then, I think Dr. Charlie Mayo from the Mayo Clinic said it best. He said, "I believe we are traveling the road to the elucidation of all disease, but the journey's end may be a long way off." It's likely that more and more myths will be coming down the road. It's important for us to continue to look for the best evidence base so we can separate fact from fiction. Thank you very much.