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How Do Certain Diseases Lead to Erectile Dysfunction?

Here at SexHealthMatters, we talk a lot about [erectile dysfunction \(ED\)](#) and its link to certain medical conditions, like heart disease and diabetes. Often, ED is one of the first symptoms of something more serious, so we encourage men to have a thorough checkup with their doctor when they start having problems with erections.

Why do certain diseases lead to ED? Last month, the Basic Science Committee of the Sexual Medicine Society of North America (SMSNA - the scientific organization behind SexHealthMatters) published a white paper on this subject in The Journal of Sexual Medicine.

The authors analyzed a number of studies to help us better understand the “mechanistic link” between cardiovascular/metabolic diseases and ED. In other words, they aimed to explain what’s happening in the body and why that process can lead to ED.

Today, we’ll take a closer look. But before we start, let’s break down some scientific medical concepts:

- **Cardiovascular diseases.** The word “cardiovascular” refers to the heart and blood vessels, so cardiovascular diseases affect these areas. Many are caused by atherosclerosis – hardening of the arteries – which happens when plaque accumulates on the walls of the arteries. This can impair, and sometime block, blood flow.

Some examples of cardiovascular diseases are heart failure, heart attack, heart valve problems, stroke, and arrhythmia (abnormal heart rhythm).

Cardiovascular disease is sometimes called heart disease.

- **Metabolic diseases** affect your metabolism – your body’s ability to convert the food you eat into energy. Diabetes is one example. In fact, diabetes is a major player in the development of ED. Diabetic men usually start having erection problems years before men without diabetes.

Risk factors for both cardiovascular and metabolic diseases include high blood pressure, obesity, smoking, high cholesterol, and aging.

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- **Erections.** To understand how medical conditions can lead to ED, it helps to have the basics on how an erection occurs. When a man is sexually stimulated, his brain sends messages through the nervous system to his penis. This triggers an erection. These messages tell arteries to expand so that the penis can fill with blood. Smooth muscle tissue relaxes and helps the process along. When the penis is rigid, veins constrict to keep the blood inside until the man ejaculates. Once this happens, veins open up again and the blood flows back into the body.

As you might imagine, good blood flow is critical for a good erection. But so is the neurological network that sends messages back and forth between the penis and brain.

Now, just how do these diseases interfere with erections? Here's what the SMSNA scientists reported:

- **Endothelial dysfunction.** The endothelium is tissue that lines your blood vessels. Endothelial dysfunction is often considered a precursor to atherosclerosis and can interfere with blood flow to the penis.
- **Smooth muscle tissue.** ED's link to problems with smooth muscle tissue have not been studied as widely as endothelial dysfunction. However, the authors noted that problems with the production of nitric oxide (an important compound for erections) can make it more difficult for smooth muscle tissue to relax. In turn, this can impair penile blood flow.
- **Autonomic neuropathy.** "Neuropathy" means nerve damage. Cardiovascular and metabolic diseases can damage the autonomic nervous system, which controls bodily processes that you don't necessarily think about. For example, you don't "tell" your digestive system to process food or your heart to keep beating. Erections work the same way. However, illnesses can interfere with the autonomic messages that travel between the brain and penis. When this happens, the brain can't properly "tell" the penis to get ready for sex, so the erection process may be incomplete. Or, it might not happen at all.
- **Hormones.** Testosterone is an important hormone for men's overall health, particularly sexual function. Sometimes cardiovascular and metabolic diseases can impair the release of testosterone or the way it works in the body, resulting in ED.
- **Metabolism.** Cardiovascular and metabolic diseases can disrupt a man's metabolism, making it more difficult for him to get erections. You might have heard the term "metabolic syndrome." This is actually an umbrella term for a number of conditions, including high blood sugar, high blood pressure, obesity, low HDL ("good") cholesterol, and high levels of triglycerides. These factors can disrupt blood flow to the penis.

What does all this mean for men?

If you are having trouble getting erections, seeing a doctor is the first step. As we mentioned earlier, ED is often the first sign of an underlying medical condition and it's best to have everything checked out. If there is something more serious going on, your doctor can start treating you right away.

Sometimes, that treatment resolves the other ED. In other cases, you might need more help. There are [many ways to treat ED](#). Chances are good that you and your doctor will find the right therapy for you.

If you're in a relationship, include your partner in the conversation, too. ED can be frustrating, embarrassing, and stressful. Make sure your partner is part of your team.

Finally, even if you're not having erection troubles right now, keep cardiovascular and metabolic health in mind. Try to lower your risk for these illnesses by following healthy habits: eating right, exercising, and quitting smoking are great ways to start. Your doctor can help you develop the right program for you, so don't hesitate to ask.

Resources

American Heart Association

"What is Cardiovascular Disease?"

(Last reviewed: December 18, 2014)

http://www.heart.org/HEARTORG/Caregiver/Resources/WhatisCardiovascularDisease/What-is-Cardiovascular-Disease_UCM_301852_Article.jsp#.Vo1qPBUrlU

The Journal of Sexual Medicine

Musicki, Biljana, PhD, et al.

"Basic Science Evidence for the Link Between Erectile Dysfunction and Cardiometabolic Dysfunction"

(Full-text. First published online: December 8, 2015)

<http://onlinelibrary.wiley.com/doi/10.1111/jsm.13069/full>

MedlinePlus

“Metabolic Disorders”

(Last reviewed: September 12, 2014)

<https://www.nlm.nih.gov/medlineplus/metabolicdisorders.html>

Sexual Medicine Society of North America

“Diabetes – Erectile Dysfunction”

<http://www.sexhealthmatters.org/erectile-dysfunction/diabetes-erectile-dysfunction/>

“How is Diabetes Affecting Your Sexual Health?”

(March 12, 2013)

<http://www.sexhealthmatters.org/sex-health-blog/how-is-diabetes-affecting-your-sexual-health>

“Metabolic Syndrome More than Doubles ED Risk”

(June 4, 2015)

<http://www.sexhealthmatters.org/news/metabolic-syndrome-more-than-doubles-ed-risk>

“Nitric Oxide Microspheres”

(November 13, 2013)

<http://www.sexhealthmatters.org/news/nitric-oxide-microspheres>