



Heart Stents: Tools for Treating Blocked Blood Vessels

If you hold a **stent** in the palm of your hand, it doesn't look all that different from a spring in a retractable ink pen. At a glance, the apparent simplicity of a stent belies the decades of engineering and research studies that have contributed to its development. Without stents, **angioplasty** — a procedure to clear blocked arteries and stop a heart attack or improve heart disease symptoms — would not be the success story that it is today. Stents play a crucial, long-term role in enabling oxygen-rich blood to flow to the heart muscle.

Read on to learn more about heart stents.

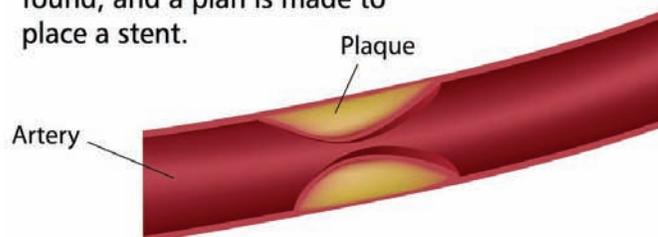
What Is a Heart Stent?

If you have suffered a **heart attack**, you may already have one or more stents in your heart arteries. Likewise, if you are experiencing symptoms of heart disease that impact your quality of life, then your cardiologist may recommend a procedure called **angioplasty**, which often includes the insertion of stents in blocked arteries. (For more information about the procedure, see SecondsCount's information sheet, "**Coronary Angioplasty: Treatment for Heart Disease.**")

A heart stent is a tiny metal, mesh tube that is inserted permanently into an artery. To understand how a stent works, it helps to understand how **heart disease** affects your heart and arteries. Your heart is a muscle that pumps blood throughout your body, but it also needs its own blood supply. The blood vessels that provide oxygen-rich blood to your heart are called the **coronary arteries**. These arteries can become narrowed through build-up of plaque, which is made up of cholesterol and other substances. Narrowed arteries can cause symptoms, such as chest pain (**angina**), shortness of breath, and fatigue. If a plaque ruptures, a blood clot can form at the site of the rupture and block blood flow through the artery. This is a heart attack.

A stent comes mounted on a tiny deflated balloon that is at the end of a 4½-foot long, very thin **catheter**. The stent is then threaded through the heart artery to the site of the blockage. A specially trained heart doctor, called an **interventional cardiologist**, inflates the balloon, which expands the stent into place while also pushing the blockage out of the way against

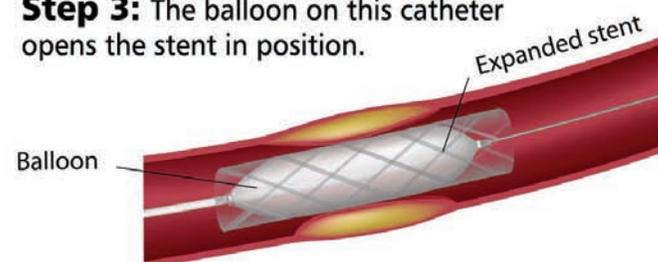
Step 1: A significant blockage is found, and a plan is made to place a stent.



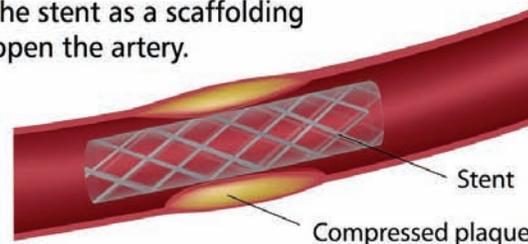
Step 2: The stent delivery catheter positions the stent to cover the lesion.



Step 3: The balloon on this catheter opens the stent in position.



Step 4: The balloon is deflated and removed, leaving the stent as a scaffolding to hold open the artery.



the artery walls. When the balloon is deflated, the stent keeps its new open shape against the artery wall. The stent then acts as a permanent scaffolding to prop the artery open, allowing blood to flow freely to the heart muscle.



There are two main kinds of stents currently used in the United States: bare metal and drug eluting. While both types of stents help to hold the artery open, drug-eluting stents release medication that helps prevent growth of artery-blocking scar tissue around the stent.

What Are the Benefits and Risks of Stenting?

Be sure to discuss the benefits and risks of angioplasty and stenting with your interventional cardiologist. Angioplasty and stenting quickly stops a heart attack and restores blood flow to the heart. For patients with stable heart disease — those who are not at high risk of a heart attack — a stent can provide effective, immediate improvement of symptoms such as chest pain, shortness of breath, and fatigue. For patients who need improved blood flow to their heart arteries, when compared to bypass surgery, angioplasty and stenting also offers a shorter recovery time.

Stenting only occurs as part of an angioplasty procedure and therefore carries the same risks. Risks specific to a stent include that scar tissue or a blood clot may form within a stent, or very rarely an allergic reaction may occur.

The greatest risks from a stent occur when patients do not take medications as prescribed. Your physician will prescribe medications that are designed to prevent a blood clot from forming in the stent, which can cut off blood flow to the heart muscle and cause a heart attack. If you received a bare metal stent, you will be required to take **medications** such as clopidogrel (Plavix), prasugrel (Effient), or ticagrelor (Brilinta) for at least one month. For drug-eluting stents, you will be prescribed those same medications for at least one year. You should also be on a lifelong aspirin regimen.

If you are considering not taking your medications for any reason, speak directly with the interventional cardiologist who prescribed them. Stopping your medications is potentially dangerous and could increase your risk for blood clot formation in your stent. Bring any concerns you have about your medications to the attention of your interventional cardiologist, whether those concerns are side effects of the medication, financial costs of the prescription, forgetfulness in taking the medications, or other issues. If you later need to have another procedure, such as dental work or a colonoscopy, you may be told to

stop taking your blood-thinning medications. Be sure to ask your cardiologist if it is safe to do so. Stopping these medications too soon could cause your stent to suddenly close, which is riskier than having these procedures while taking the blood thinners.

What Questions Should I Ask My Healthcare Provider About Stents?

- What **type of stent do I have** and what does this mean for me?
- Will getting a stent **save my life**?
- What are the **benefits and risks** of stenting for me?
- What are my **alternatives**? Could I be treated with medicines instead of a stent?
- What **follow-up** is necessary after the procedure? What do I need to do?
- What medicines will I be taking?
- Can you help me with my **concerns about medicines** (side effects, financial cost, etc.)?
- What **lifestyle changes** should I be making?
- Would I benefit from being referred to **cardiac rehabilitation**?

What Should I Do If I Have More Questions?

Ask them. Your heart health is of vital importance. Getting complete information if you are discussing coronary artery stenting with your interventional cardiologist can help you determine if the procedure is right for you. Also, be sure to thoroughly answer any questions your interventional cardiologist may ask of you, such as any medications you are taking or other conditions you have.

If you have already had a stent placed, asking questions is a key step in reducing the risk of future complications. A discussion with your interventional cardiologist can help you with taking medications appropriately, getting adequate follow-up, and enrolling in a program for a heart-healthy future.

For more information, see SecondsCount's "Coronary Angioplasty: Treatment for Heart Disease" information sheet on www.SecondsCount.org.