

Severe Aortic Stenosis and the Valve Replacement Procedure



**A Guide for Patients
and their Families**



If you've been diagnosed with severe aortic stenosis, you probably have a lot of questions and concerns. The information in this booklet will help you learn more about your heart, severe aortic stenosis, and treatment options.

Your heart team will recommend which treatment option is best for you. Please talk with them about any questions you have.

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About Your Heart

The heart is a muscle about the size of your fist. It is a pump that works nonstop to send oxygen-rich blood throughout your entire body. The heart is made up of four chambers and four valves. The contractions (heartbeats) of the four chambers push the blood through the valves and out to your body.

Pulmonic Valve

controls the flow of blood to the lungs (not shown below)

Aortic Valve

controls the flow of blood out of your heart to the rest of the body

Right Atrium

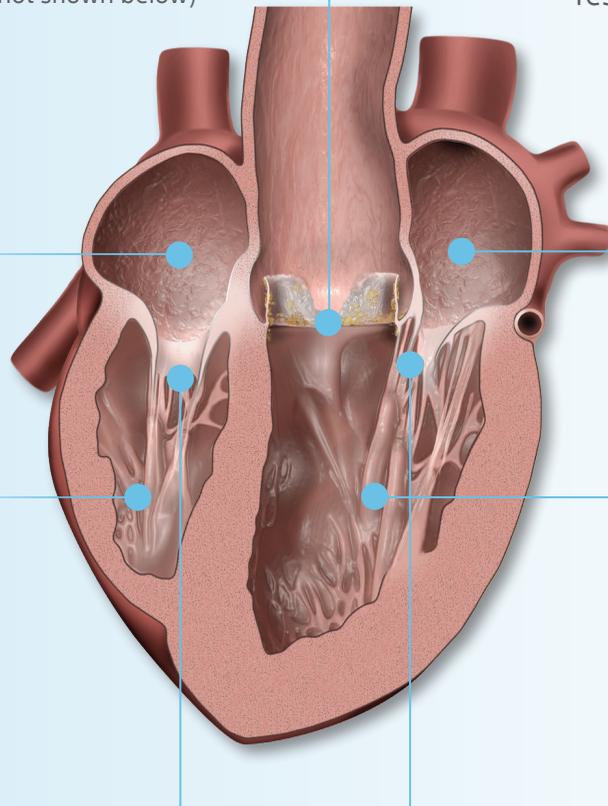
Left Atrium

Right Ventricle

Left Ventricle

Tricuspid and Mitral Valves

control the flow of blood between the chambers of the heart



What Is Severe Aortic Stenosis?

The aortic valve is made up of two or three tissue flaps, called leaflets. Healthy valves open at every heart contraction, allowing blood to flow forward to the next chamber, and then close tightly to prevent blood from backing up. Blood flows in one direction only. This is important for a healthy heart.

Severe aortic stenosis occurs when the valve leaflets become stiff, reducing their flexibility and ability to fully open and close properly. This results in a narrowing (stenosis) of the valve opening.

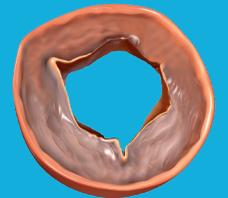
This narrowing reduces and restricts blood flow, requiring your heart to work harder. As a result, less oxygen-rich blood flows from your lungs to the brain and the rest of your body.

What Causes Severe Aortic Stenosis?

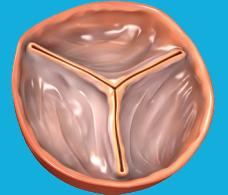
Severe aortic stenosis is an age-related, progressive disease. It can be caused by a congenital heart defect, rheumatic fever, or radiation therapy. The most common cause is the gradual buildup of calcium (mineral deposits) on the leaflets of the aortic valve.

See the difference between healthy and diseased valves

Healthy Valve



open

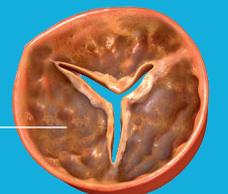


closed

Diseased Valve



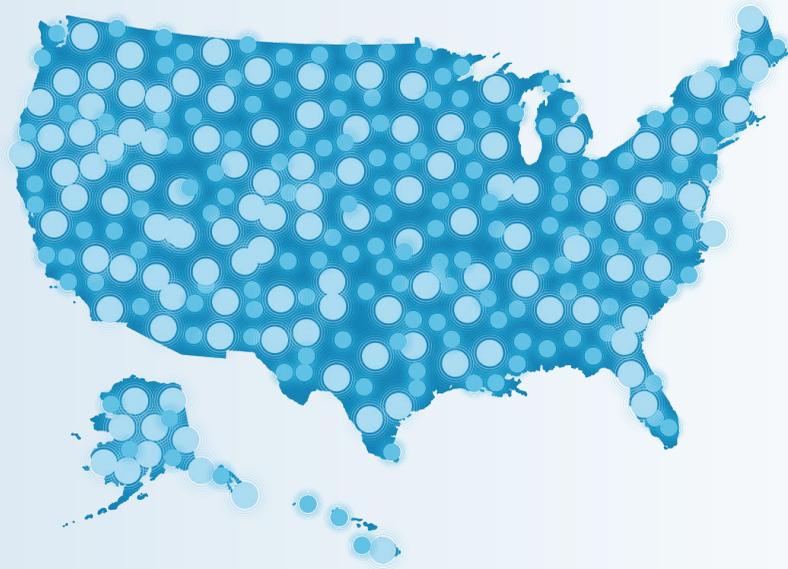
open



closed

calcium buildup

Affecting about 7% of all people over the age of 65, aortic stenosis is the most common valvular heart disease in the world.¹



AN ESTIMATED
1.5 MILLION people in the U.S.
SUFFER FROM AORTIC STENOSIS.²

500,000 of those people
HAVE A SEVERE CONDITION.²

An estimated 250,000 patients with severe aortic stenosis experience symptoms. Severe aortic stenosis is a life-threatening condition. Your doctor may prescribe medications to ease the symptoms of your severe aortic stenosis. However, if the diseased valve is not replaced, your symptoms will probably worsen to heart failure and possibly even death.²⁻⁴

What Are the Symptoms of Severe Aortic Stenosis?

In the earlier stages of aortic stenosis, many people don't experience symptoms. As the severity increases, the most frequent symptoms include:

Shortness of breath



Chest pain, pressure, or tightness



Feeling lightheaded or dizzy



Other symptoms can include fatigue causing difficulty when exercising or completing day-to-day activities.

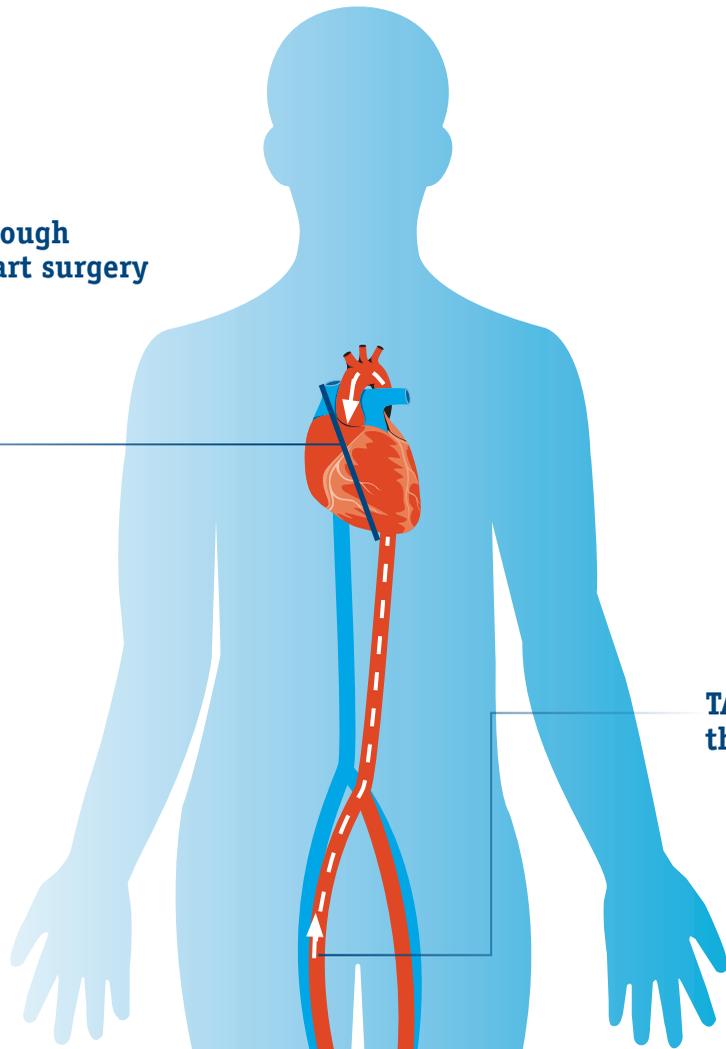
Treatment Options for Severe Aortic Stenosis

The only effective treatment for severe aortic stenosis is replacement of the aortic valve. There are two possible treatment options.

Surgical Aortic Valve Replacement (SAVR)

Surgical aortic valve replacement is done through open-heart surgery. During the operation, your heart is stopped and a heart-lung machine temporarily takes over the function of pumping blood through your body. A surgeon will replace the diseased aortic valve with an artificial valve. Recovery from open heart surgery frequently takes weeks to months.

**SAVR through
open-heart surgery**



**TAVR through
the femoral artery**



Transcatheter Aortic Valve Replacement (TAVR)

Transcatheter aortic valve replacement is a less-invasive procedure that replaces the aortic valve *without* opening your chest to reach your heart. To access your heart, your doctor makes a small incision in your artery or blood vessel, most often in the groin.

The artificial valve is compressed onto a catheter that travels through a hollow tube up through a blood vessel, all the way to your heart. Your doctor will expand the replacement valve, pushing the diseased parts of the aortic valve out of the way. Special X-ray equipment is used to guide positioning and placement of the new valve.

Patients who undergo a TAVR procedure typically have an easier time recovering and experience less discomfort. How quickly you recover and return to your daily routine will depend on your overall state of health.

Stroke Risk Reduction

During the aortic valve replacement procedure, pieces of the calcified heart valve or tissue can break loose and travel in the bloodstream toward the brain. If this material reaches a vital organ serious consequences, such as a stroke, may occur.

This material may cause a stroke by blocking blood flow to the brain causing long-term damage. Talk with your heart team about a cerebral embolic protection system that may reduce your risk of stroke during the TAVR procedure.



Before a TAVR Procedure

Before hospital admission for a TAVR procedure, your heart team will conduct a series of tests to properly assess your overall health. Be sure to talk with your heart team about any medications you are taking and if you have any planned medical or dental procedures.

Appointments

| Date | Time | Location |
|-------|-------|----------|
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |
| _____ | _____ | _____ |

Useful Contacts

Notes

Talk with your heart team about any questions you have regarding the treatment for severe aortic stenosis.

For more information about aortic stenosis and treatment options, visit

TreatTheHeart.com



What Are the Risks of TAVR?

A valve replacement is a major heart procedure. There are risks with all medical procedures. Speak with your heart team to understand the risks and benefits for you.

Risks of TAVR include but are not limited to:

- Access site complications, typically in the groin, including arteriovenous fistula, hematoma or lymphatic problems
- Allergic reaction to device or procedural materials
- Arrhythmia, abnormal heart beats, or new conduction system injury including need for permanent pacemaker
- Heart attack or heart failure
- Stroke, transient ischemic attack (TIA), cerebral infarction or neurologic deficits
- Death
- Clotting in the blood stream or thrombosis (including air, tissue, thrombus or device fragments)
- Heart tissue or valve injury
- Permanent disability
- Fluid in the space that surrounds the lungs or heart
- Kidney failure or damage
- Difficulty breathing
- Problems with the artificial valve such as leakage (regurgitation) or restriction (stenosis).

These complications may require additional medical, percutaneous or surgical intervention, including re-operation and replacement of the valve. These complications can be very serious and possibly fatal.

Illustrations for informational purposes – not indicative of actual size or clinical outcomes.

1. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5317356/>
2. Bach D, Radeva J, Birnbaum H, et al. Prevalence, Referral Patterns, Testing, and Surgery in Aortic Valve Disease: Leaving Women and Elderly Patients Behind. *J Heart Valve Disease*. 2007;362-9.
3. Iivanainen A, Lindroos M, Tilvis R, et al. Natural History of Aortic Valve Stenosis of Varying Severity in the Elderly. *Am J Cardiol*. 1996;97-101.
4. Aronow W, Ahn C, Kronzon I. Comparison of Echocardiographic Abnormalities in African-American, Hispanic, and White Men and Women Aged >60 Years. *Am J Cardiol*. 2001;1131-3.

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