

Aortic Stenosis Fact Sheet

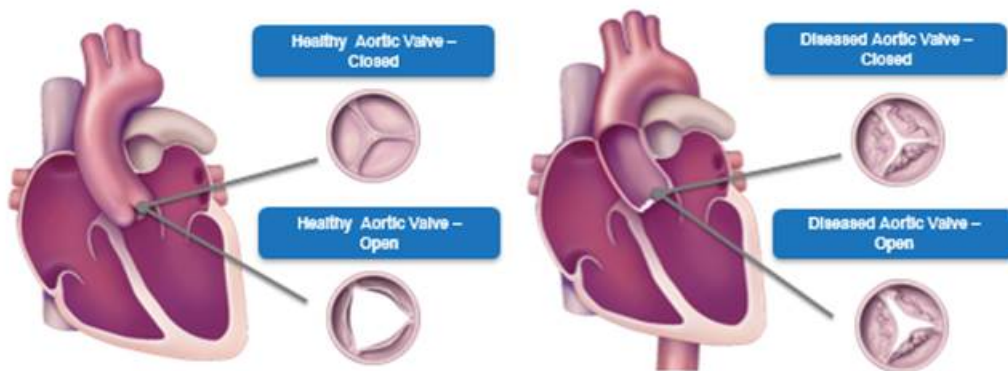
Introduction

Aortic stenosis is a progressive disease that occurs with a narrowing of the patient's aortic valve opening. Aortic stenosis can be caused by a birth defect, rheumatic fever, radiation therapy, or it can be related to age. In fact, the prevalence of aortic stenosis increases with age. It is estimated that approximately 2.5 million people, or 12.4% of the population, in the United States over the age of 75 suffer from aortic stenosis.

Overview of the Disease

Human heart valves are remarkable structures. These tissue-paper thin membranes attached to the heart wall constantly open and close to regulate blood flow (causing the sound of a heartbeat). When there is a narrowing of your heart's aortic valve opening, this is known as aortic stenosis. This narrowing does not allow normal blood flow. It is most often caused by age-related calcification, but can be caused by a birth defect, rheumatic fever, or radiation therapy

In elderly patients, aortic stenosis is sometimes caused by the build-up of calcium (mineral deposits) on the aortic valve's leaflets. Over time, the leaflets become stiff, reducing their ability to fully open and close. When the leaflets don't fully open, a person's heart must work harder to push blood through the aortic valve to the rest of the body. Eventually, the heart gets weaker, increasing the risk of heart failure (heart cannot supply enough blood to the body).



If you have severe aortic stenosis and are experiencing symptoms, it can be life-threatening and can progress rapidly.

Because the heart needs to work so much harder pumping blood through the body, it may cause symptoms like severe shortness of breath and extreme fatigue.

However, it's important to know that heart valve disease may occur with no outward symptoms.

While symptoms of aortic valve disease are more associated with severe aortic stenosis, the symptoms are commonly misunderstood by patients as 'normal' signs of aging. Many patients initially appear asymptomatic, but on closer examination up to 32% exhibit symptoms.

What are the signs of aortic stenosis?

You may notice symptoms like:

- Chest pain
- Fatigue

- Shortness of breath
- Lightheadedness, feeling dizzy, and/or fainting
- Difficulty when exercising

Major risk factors

Factors associated with aortic valve disease include the following:

- Increasing age
- High blood pressure
- High cholesterol
- Smoking

Severe aortic stenosis is life threatening, and treatment for this condition is critical. Without aortic valve replacement, patients with severe aortic stenosis have a survival rate as low as 50% at 2 years after the onset of symptoms, and 20% at 5 years after the onset of symptoms.

Diagnosis

In addition to a physical exam, severe aortic stenosis is diagnosed in several ways, the most common being: echocardiogram, electrocardiogram (EKG), chest X-ray of the patient's heart, and cardiac catheterization (angiography).

Aortic Valve Replacement Options

Transcatheter Aortic Valve Replacement (TAVR)

TAVR (sometimes called transcatheter aortic valve implantation, or TAVI), is a less invasive procedure which allows a new valve to be inserted within the native, diseased aortic valve.

The TAVR procedure can be performed using one of many approaches, the most common being the transfemoral approach (through a small incision in the leg). Only a Heart Team can decide which approach is best, based on the patient's medical condition and other factors.

In preparation for the patient's procedure, the patient may be placed under anesthesia. The doctor will make an incision in the leg, and will insert a short hollow tube called a sheath. This will allow the doctor to put various devices through the sheath to access the patient's heart. The heart valve is placed on the delivery system, and compressed onto a balloon to make it small enough to fit through the sheath. Once the delivery system reaches the patient's diseased valve, the balloon will be inflated with fluid, expanding the new valve into place. The new valve pushes the leaflets of the patient's diseased valve aside, and the frame of the new valve uses the diseased valve's leaflets to secure itself in place. The balloon is then deflated and removed. The patient's doctor will ensure the new valve is working properly before closing up the incision.

The TAVR procedure may involve general anesthesia and is associated with specific contraindications as well as adverse effects, including risks of death, stroke, major vascular complications and major bleeding, and other life-threatening and serious events. To see a full list of warnings and precautions, please visit SAPIEN3.com.

Open-Heart Surgery

During open-heart surgery, the surgeon removes the diseased aortic valve and replaces it with either a mechanical valve (made from man-made materials) or a biological valve (made from animal or human tissue).

Additional Information

To review all important risks for the SAPIEN 3 valve, please visit www.SAPIEN3.com. More information about the TAVR procedure can be found at www.NewHeartValve.com.

Important Safety Information

Edwards SAPIEN 3 Transcatheter Heart Valve with the Edwards Commander Delivery System

Indications: The Edwards SAPIEN 3 transcatheter heart valve, model 9600TFX, and accessories are indicated for relief of aortic stenosis in patients with symptomatic heart disease due to severe native calcific aortic stenosis who are judged by a Heart Team, including a cardiac surgeon, to be at intermediate or greater risk for open surgical therapy (i.e., predicted risk of surgical mortality \geq 3% at 30 days, based on the Society of Thoracic Surgeons (STS) risk score and other clinical co-morbidities unmeasured by the STS risk calculator).

Contraindications: The valve and delivery systems are contraindicated in patients who cannot tolerate an anticoagulation/antiplatelet regimen or who have active bacterial endocarditis or other active infections.

Warnings: Observation of the pacing lead throughout the procedure is essential to avoid the potential risk of pacing lead perforation. There may be an increased risk of stroke in transcatheter aortic valve replacement procedures, as compared to balloon aortic valvuloplasty or other standard treatments in high or greater risk patients. The devices are designed, intended, and distributed for single use only. **Do not resterilize or reuse the devices.** There are no data to support the sterility, nonpyrogenicity, and functionality of the devices after reprocessing. Incorrect sizing of the valve may lead to paravalvular leak, migration, embolization, and/or annular rupture. Accelerated deterioration of the valve may occur in patients with an altered calcium metabolism. Prior to delivery, the valve must remain hydrated at all times and cannot be exposed to solutions other than its shipping storage solution and sterile physiologic rinsing solution. Valve leaflets mishandled or damaged during any part of the procedure will require replacement of the valve. Caution should be exercised in implanting a valve in patients with clinically significant coronary artery disease. Patients with pre-existing mitral valve devices should be carefully assessed prior to implantation of the valve to ensure proper valve positioning and deployment. Do not mishandle the delivery system or use it if the packaging or any components are not sterile, have been opened or are damaged (e.g., kinked or stretched), or if the expiration date has elapsed. Use of excessive contrast media may lead to renal failure. Measure the patient's creatinine level prior to the procedure. Contrast media usage should be monitored. Patient injury could occur if the delivery system is not un-flexed prior to removal. Care should be exercised in patients with hypersensitivities to cobalt, nickel, chromium, molybdenum, titanium, manganese, silicon, and/or polymeric materials. The procedure should be conducted under fluoroscopic guidance. Some fluoroscopically guided procedures are associated with a risk of radiation injury to the skin. These injuries may be painful, disfiguring, and long-lasting. Valve recipients should be maintained on anticoagulant/antiplatelet therapy, except when contraindicated, as determined by their physician. This device has not been tested for use without anticoagulation.

Precautions: Long-term durability has not been established for the valve. Regular medical follow-up is advised to evaluate valve performance. Glutaraldehyde may cause irritation of the skin, eyes, nose, and throat. Avoid prolonged or repeated exposure to, or breathing of, the solution. To maintain proper valve leaflet coaptation, do not overinflate the deployment balloon. Appropriate antibiotic prophylaxis is recommended post-procedure in patients at risk for prosthetic valve infection and endocarditis. Safety, effectiveness, and durability have not been established for valve-in-valve procedures. Safety and effectiveness have not been established for patients with the following characteristics/comorbidities: non-calcified aortic annulus; severe ventricular dysfunction with ejection fraction $<$ 20%; congenital unicuspid or congenital bicuspid aortic valve; mixed aortic valve disease (aortic stenosis and aortic regurgitation with predominant aortic regurgitation $>$ 3+); pre-existing prosthetic heart valve or prosthetic ring in any position; severe mitral annular calcification (MAC), severe ($>$ 3+) mitral insufficiency, or Gorlin syndrome; blood dyscrasias defined as leukopenia (WBC $<$ 3000 cells/mL), acute anemia (Hb $<$ 9 g/dL), thrombocytopenia (platelet count $<$ 50,000 cells/mL), or history of bleeding diathesis or coagulopathy; hypertrophic cardiomyopathy with or without obstruction (HOCM); echocardiographic evidence of intracardiac mass, thrombus, or vegetation; a known hypersensitivity or contraindication to aspirin, heparin, ticlopidine (Ticlid), or clopidogrel (Plavix), or sensitivity to contrast media, which cannot be adequately premedicated; significant aortic disease, including abdominal aortic or thoracic aneurysm defined as maximal luminal diameter 5 cm or greater, marked tortuosity (hyperacute bend), aortic arch atheroma (especially if thick [$>$ 5 mm], protruding, or ulcerated) or narrowing (especially with calcification and surface irregularities) of the abdominal or thoracic aorta, severe "unfolding" and tortuosity of the thoracic aorta; access characteristics that would preclude safe placement of 14F or 16F Edwards eSheath introducer set, such as severe obstructive calcification, severe tortuosity, or diameter less than 5.5 mm or 6 mm, respectively; or bulky calcified aortic valve leaflets in close proximity to coronary ostia.

Potential Adverse Events: Potential risks associated with the overall procedure including potential access complications associated with standard cardiac catheterization, balloon valvuloplasty, the potential risks of conscious sedation and/or general anesthesia, and the use of angiography: death; stroke/transient ischemic attack, clusters, or neurological deficit; paralysis; permanent disability; respiratory insufficiency or respiratory failure; hemorrhage requiring transfusion or intervention; cardiovascular injury including perforation or dissection of vessels, ventricle, myocardium, or valvular structures that may require intervention; pericardial effusion or cardiac tamponade; embolization including air, calcific valve material, or thrombus; infection

including septicemia and endocarditis; heart failure; myocardial infarction; renal insufficiency or renal failure; conduction system defect which may require a permanent pacemaker; arrhythmia; retroperitoneal bleed; arteriovenous (AV) fistula or pseudoaneurysm; reoperation; ischemia or nerve injury; restenosis; pulmonary edema; pleural effusion; bleeding; anemia; abnormal lab values (including electrolyte imbalance); hypertension or hypotension; allergic reaction to anesthesia, contrast media, or device materials; hematoma; syncope; pain or changes at the access site; exercise intolerance or weakness; inflammation; angina; heart murmur; and fever. Additional potential risks associated with the use of the valve, delivery system, and/or accessories include: cardiac arrest; cardiogenic shock; emergency cardiac surgery; cardiac failure or low cardiac output; coronary flow obstruction/ transvalvular flow disturbance; device thrombosis requiring intervention; valve thrombosis; device embolization; device migration or malposition requiring intervention; valve deployment in unintended location; valve stenosis; structural valve deterioration (wear, fracture, calcification, leaflet tear/tearing from the stent posts, leaflet retraction, suture line disruption of components of a prosthetic valve, thickening, stenosis); device degeneration; paravalvular or transvalvular leak; valve regurgitation; hemolysis; device explants; nonstructural dysfunction; mechanical failure of delivery system and/or accessories; and non-emergent reoperation.

Edwards Crimper

Indications: The Edwards Crimper is indicated for use in preparing the Edwards SAPIEN 3 transcatheter heart valve for implantation.

Contraindications: There are no known contraindications.

Warnings: The devices are designed, intended, and distributed for single use only. **Do not resterilize or reuse the devices.** There is no data to support the sterility, nonpyrogenicity, and functionality of the devices after reprocessing.

Precautions: For special considerations associated with the use of the Edwards Crimper prior to valve implantation, refer to the Edwards SAPIEN 3 transcatheter heart valve Instructions for Use.

Potential Adverse Events: There are no known potential adverse events associated with the Edwards Crimper.

CAUTION: Federal (United States) law restricts these devices to sale by or on the order of a physician.

Information provided by Edwards Lifesciences.

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