Transcatheter Aortic Valve Replacement (TAVR)
Introduction

Your doctor has asked the Heart Valve Clinic team at Summa Health System - Akron Campus to see if having a special procedure called a transcatheter aortic valve replacement (TAVR) would help you. This type of procedure is a new way of replacing the aortic valve in your heart.

In the past, we could only replace the aortic valve by doing open heart surgery.

But today, surgeons use a small, hollow and flexible tube (catheter) to place a new valve in the heart. Your surgeon makes a small opening (incision) in the artery and threads the new valve into position to replace the diseased valve. This procedure is generally performed under anesthesia and there is no need to open the chest.

As a result, there is less risk of complications associated with major surgery. Patients also recover more quickly from this less invasive procedure.

Please read this booklet, share it with your family and bring it with you when you come for your appointment at the Heart Valve Clinic. Think about questions you might want to ask and write them down on the last page of this booklet. We will review the information with you and answer any questions you might have about the procedure.

This booklet has a lot of information about TAVR as a possible option for treating heart valve disease. We hope it helps you understand how we decide which option is the best one for you and how you are a part of the decision-making process.
Questions To Consider

Why do I need my aortic valve replaced?
Your doctor has told us that you have a heart valve disease called aortic stenosis. The aortic valve is one of four valves in your heart. These valves make sure blood flows through your heart in the right direction. When blood leaves your heart, it flows out through the aortic valve.

Stenosis means a narrowing of the aortic valve opening. Aortic stenosis mostly happens as people age. Over time, the valve stiffens and cannot open enough to let blood through. This may cause you to feel short of breath, to have chest pain or to feel faint or very tired.

Until now, the usual treatment for severe aortic stenosis has been open heart surgery. Open heart means the chest and the heart itself are opened so the doctor can operate directly on the heart valve. The doctor removes the diseased valve and replaces it with a new valve. While this surgery is being done, the person’s blood is circulated outside the body through a special machine called a heart-lung bypass machine. This is called surgical aortic valve replacement. This type of replacement is the best option for some people.

However, open heart surgery may not be your best option if you:

- Are older with other diseases like kidney or lung disease
- Have had one or more open heart surgeries in the past
- Are not well enough for a major surgery such as this
- Have had radiation treatments to your chest

Is TAVR the best option for you?
We don’t know yet. In order for us to decide whether TAVR would be best for you, we need to gather a lot of information about you, your heart and your general health.

Also, it’s not just our decision. If we recommend TAVR for you, you can choose to continue with your current treatment instead, or talk to your doctor about other options. But it is important to make your decision after we have seen you and have given you information about your possible choices.

Every person undergoes a thorough review process before we can decide if TAVR is an option. If you decide you want to know if TAVR is an option for you, you will need to come to the clinic for at least two visits (sometimes more). If you are from out of town, you will need to make your own travel and hotel arrangement for these days. If you are in the hospital right now, you may have the tests done while you are still admitted.
The Review Process

Step 1: We schedule an appointment for you at the Heart Valve Clinic for an assessment.

Step 2: You visit the Clinic for the assessment, which includes an office visit with nurses and physicians and completion of several diagnostic tests. This step may take two clinic visits to complete.

Step 3: The Heart Valve Clinic team reviews the results of your clinical exam visit and diagnostic tests and recommends the best option for treating your aortic stenosis.

Step 4: We notify you and your doctor about the team’s recommendation about your treatment.

- If a TAVR is the option of choice, we schedule you for the procedure to have your aortic valve replaced by a transcatheter approach.
- If a conventional surgery is recommended, we offer you an office visit appointment for you to discuss this with one of our heart surgeons.
- If continued medication management is recommended, we generally return you to your primary doctor or cardiologist’s care.

TAVR Assessment

During this time you will have a number of heart tests done. We will send you a letter with the dates and times of all appointments, along with information on where the appointments are located.

Since we ask a lot of questions and do a lot of tests, the clinic visit can be quite tiring. Please plan to rest in the evening.

If you are at Summa Health System - Akron Campus right now, the TAVR nurse practitioner or heart doctor will explain the plan to you and answer any questions.

If you do not speak or understand English well enough to discuss and make medical decisions, we can arrange for a medical interpreter. Please ask someone in your doctor’s office to call us the week before your clinic day to request an interpreter if you think you need one. There is no charge for this service.
What to expect during the clinic visits:

- We review what a TAVR procedure is, how TAVR is done and what the risks and benefits are of this type of procedure
- You and your family are given ample time to ask questions
- We explain how the team decides which treatment option is the best one for you
- We arrange for you to have different heart tests. We may schedule some of these tests on the same day as your valve clinic appointment.
- You answer questions about your everyday life, what you can and cannot do for yourself, your living situation and your heart symptoms
- You do a walking test and a memory test
- A nurse practitioner, a heart doctor, and a heart surgeon give you a medical check-up and ask you questions about your heart and your health

For more information, call 330.379.8190 or 330.379.5235.

Tests to expect

We ask you to have a number of heart tests to help us decide whether TAVR is the best option for you. You may have already had some of these tests done in the past, however, we do some of them again because the focus of the tests this time is specific to TAVR.

Everyone who is being considered for a TAVR will have these tests:

- An echocardiogram (also called an “Echo”) is an ultrasound test. Sound waves are bounced off different parts of the heart, creating pictures. This test allows us to look at the heart muscle, the valves of the heart, the blood vessels of the heart and how blood flows through the heart. While you are lying down on a bed, we move an ultrasound probe (camera) across your chest. It takes about 45 minutes to complete this test.

- A Computed Tomography scan (also called a “CT” or “CAT” scan) is a special type of X-ray that takes many pictures of your heart and blood vessels in your upper legs and pelvis. The computer puts these pictures together to form a three-dimensional (3-D) view of your heart and blood vessels. During the test we start a small intravenous (IV) catheter to inject a special X-ray dye into your bloodstream. This “contrast” dye outlines the heart and blood vessels so they can be seen clearly. It takes about 30 minutes to complete this test.

- A coronary angiogram (also called a “cardiac cath”) is a test to check the flow of blood in the heart’s blood vessels and to look at pressures on each side of your heart valve. A cardiologist who specializes in this procedure inserts a small, hollow and flexible tube (a “catheter”) through a small needle into an artery at the top of your leg. The tube is passed upwards to your heart and X-ray dye is injected through the catheter so we can see your blood vessels better. The test takes one to two hours, but you will stay in the hospital for about five hours after the test before you go home. If you have had a cardiac cath within the last six to nine months, we would probably not need to repeat this test.

Some people also may have this test:

- A transesophageal echocardiogram (also called a “TEE”) is done when your doctor feels a more detailed look at your heart is necessary. It is similar to a regular echocardiogram except that the smaller probe is passed through your mouth and down your esophagus (throat). The ultrasound pictures of the heart are much clearer taken from this location. We give you some medication to make you sleepy during the test. This test takes about 60 minutes. We will give you a patient information booklet describing this test so you can learn more and be better prepared for it.

- Pulmonary function testing (also called lung function testing) is done to measure how well your lungs work and to look for causes of breathing problems.
Deciding on the best option—is TAVR right for you?

After your clinic visits, the TAVR team meets to review all of the information we have gathered about you, including your medical assessment and the results of your heart tests. From this information, the team decides which option would be the best choice for treating your aortic stenosis. Our goal is to recommend the treatment option which is best for you and which is in keeping with your wishes and goals.

Possible options for you could be:

**Medical management:** Your aortic stenosis is best managed without open heart surgery or TAVR for now. Your family doctor or heart specialist (cardiologist) will continue to watch and treat your aortic stenosis with medications. Your doctor may ask you to return to the Heart Valve Clinic in the future for another evaluation.

**Surgical aortic valve replacement:** Open heart surgery is the best option for you to have your aortic valve replaced. We would contact a cardiac surgeon on your behalf to discuss this in detail with you.

**Transcatheter aortic valve replacement (TAVR):** TAVR is the best option for you to have your aortic valve replaced. This procedure can be done one of several ways. We will let you know which way we think would be best for you.

**Palliative approach:** This means that even if you had a valve replacement, you would not likely feel better or benefit in quality or length of life. We would suggest to your doctor that you be referred to a healthcare team that focuses on the goal of improving your quality of life and of helping you manage your symptoms.

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Please call the TAVR office at 844.241.8490 if:

- You have more questions about TAVR
- Your heart condition changes quite a bit from what it was during your clinic visit up to the scheduled date for your TAVR
- If we are unable to speak with you when you call, we will do our best to call you back as soon as we can. We may not be able to call you back until the clinic opens on the next business day
- If you feel it is urgent, please tell the answering service this and your call will be quickly routed for a call back
- If you feel it is an emergency, call 9-1-1 immediately
Getting Ready for the Procedure

If the team recommended transcatheter aortic valve replacement (TAVR) as the best option for you, your aortic valve will be replaced using this catheter approach rather than having open heart surgery. You will have the procedure as soon as it can be scheduled.

Your procedure will be performed in The Richard M. and Yvonne Hamlin Hybrid Operating Room Suite, which is located at the Summa Health System – Akron Campus.

The hybrid OR suite combines the functionality of a traditional operating room, a cardiac catheterization lab and an electrophysiology (EP) lab in a single roomy surgical suite. This new type of operating room is specifically designed for performing TAVR and other procedures which require multiple types of heart specialists to work together simultaneously.

What to bring to the hospital:

Bring items you might need during your hospital stay, such as:
- Toothbrush
- Toothpaste
- Dentures
- Comb or brush
- Glasses
- Hearing aid(s)
- Reading materials
- Your cane or walker (if you use one)

Bring only a few personal items and clothing. It is best if your family can keep your clothes until the day you leave the hospital.

Do not bring a lot of cash or valuables. A wedding ring is ok. You may be moved twice during your stay. We do not want to lose any of your belongings in these moves.

For valuable belongings you need to keep with you, it may be a good idea to have insurance on them for loss or damage. These items could include glasses, dentures, hearing aids, watches, as well as your own wheelchair or walker.

We will help you label your valuables with your name and room number once you are in the hospital.

Please bring a list of your current medications.
Getting ready for the TAVR:

While you are waiting for the TAVR procedure, here are some things you should do:

- **Keep active.** Stay as active as you can. Ask your doctor about how much you should do. Exercise every day, even if only for a short while. Slow down if you get short of breath, have chest pain or feel faint. Talk with your doctor about what kind of exercise is best for you.

- **Ask about driving.** We usually recommend that you do not drive until your valve is replaced. Everyone is different, however. Ask your family doctor about whether or not it is safe for you to drive during this time.

- **Eat healthy.** It is important that you eat well during your wait for the TAVR. Your doctor may have asked you to limit the amount of liquids and salt you should have. Continue to follow your doctor’s recommendations.

- **Take your medicines.** Continue to take the medicines that your doctor has prescribed.

- **See your dentist.** If you have your own teeth and have not seen a dentist in the last six months, make an appointment. If you need dental work done, have it done before your TAVR procedure. Dental work done right after your TAVR procedure could cause the new valve to become infected.

- **See any other recommended doctors.** Your TAVR nurse or doctor may have asked you to see other special doctors or therapists or a dietitian to help you get well after your TAVR. Call and make appointments to see them before the procedure.

- **Plan ahead.** Plan ahead for your return home and how you will get there. Plan for any extra help you may need once you get home from the hospital. See the section on “Going Home.”

- **Plan now for the care you wish to receive if your health worsens.** Think about your personal and financial affairs. Talk to your family now about your future healthcare wishes in case you cannot speak for yourself later.

- **Write down your questions and concerns.** Contact the TAVR Clinic office with these questions. It is better to get answers to your questions now, rather than the morning of your TAVR procedure.
The TAVR Procedure

What happens before the procedure?
You will be given specific instructions at your valve clinic appointment prior to your procedure. This includes your pre-procedure skin prep and any additional laboratory tests you may need.

While in the admissions area, we will:
• Ask that you change into a hospital gown
• Start an intravenous (IV) line in one of the veins of your arm
• Attach you to a heart monitor
• Ask you to sign a form giving us your consent to the procedure
• Introduce your anesthesiologist who will give the medicine to make you sleep during the procedure
• Have you speak with your surgeon and other specialists who will be in the operating room with you
• Answer questions you and your family may still have.

What happens during the procedure?
You are taken to the procedure room, where your anesthesiologist gives you medicines to let you relax and sleep during the procedure. With “General Anesthesia” medicines are given that cause all of your muscles to completely relax, including the muscles you use to breathe.

Once you are asleep, the doctor puts a breathing tube down your throat and into your lungs to give you oxygen and help you breathe.

While you are sleeping, we may put a urinary catheter (a small hollow tube) into your bladder to drain urine if needed.

The whole TAVR procedure may take anywhere from 90 minutes to three hours. The actual placement of the new heart valve usually takes 30 to 45 minutes.

What happens right after the procedure?
• From the Procedure Room you will go to the Cardiovascular Intensive Care Unit.
• For most people who receive general anesthesia, the breathing tube is removed in the procedure room, or as soon as it is safe to remove it. Usually we remove the tube fairly soon after the procedure.
• If you wake up with the tube in place, do not worry. We tell you what to do and how to communicate with us.

How is the procedure done?
This depends on what approach you are having:

If you are having a transfemoral TAVR
(through the groin):
• A small opening is made in the femoral artery in your groin
• A catheter (a small flexible and hollow tube) is threaded through the artery and up into the heart
• The doctor uses a special X-ray machine to guide the catheter and new valve into the right place
• We may insert a small wire and attach it to a pacemaker in case we need to control your heart rhythm while the valve is put in place
• Once the valve is secured in place, the catheter and wire are removed
• A dressing is placed over the skin opening

If you are having a trans aortic or other surgical approach TAVR (usually through the chest wall):
• A small incision is made between the ribs in your chest wall
• The catheter is inserted through the chest and into the heart
• The doctor uses a special X-ray machine to guide the catheter and new valve into position
• We may insert a small wire and attach it to a pacemaker in case we need to control your heart beat while the valve is placed
• We may insert a chest tube into the chest cavity to help drain any blood or fluids after the surgery
• Once the valve is secured in place, the catheter and wire are removed
• The skin opening will be closed with surgical glue.
During the first 24 hours of recovery, here’s what you can expect:

Equipment:
- You will be attached to a heart monitor
- You will have an intravenous (IV) line in your arm and maybe one in your neck
- You may have a urinary catheter in place to drain urine from the bladder
- You may have a chest tube or pacemaker wires still in place
- Our goal is to remove all of this equipment as soon as possible, often the same day as your procedure or early the next morning. If you have a chest tube, we usually take it out the day after your procedure.

Activity:
- At first, we keep you lying in bed. We will help you turn from side to side often and begin increasing your activity as soon as it is safe. Increasing your activity is important to your recovery.
- Our goal is to get you sitting in bed, then in a chair and then walking the evening of your procedure.

Nutrition:
- Once the effects of the anesthesia are gone and you feel well enough, we will see how well you swallow.
- If you are doing ok, you can start drinking clear fluids and progress to eating a low sodium diet.

Equipment:
- To help us keep a close watch on your heart, we may leave you on a heart monitor for the first few days or until you leave the hospital.

Dressing care:
- Your nurse will change and remove your dressing as necessary.

Pain and discomfort:
- We give you medication to help relieve pain.
- If you had a trans femoral TAVR (through the groin area), you may have pain in the groin area. Sometimes, people get a bruise, and it can get quite large. The bruise will slowly go away. Most people do not feel a lot of pain after this procedure.
- If you had a trans aortic or alternate surgical approach TAVR (usually through the chest wall), you may have pain in the chest area. Let us know if you feel pain. We give you medication to ease the pain so you can move around comfortably and heal more quickly.
- Do not worry about taking too much pain medication. It is best to take as much as you need to keep your pain under control. As you recover, you will not need as much pain medication.
Activity:
We will get you to gradually increase your level of activity. It is very important that you try to be as active as possible to prepare for when you leave the hospital.

Nutrition:
Your appetite will probably be smaller than usual for a few days. It is important to drink enough liquids and eat enough food to help you recover as soon as possible. Talk to your nurse about any concerns or special needs you have.

Visitors:
Visiting hours are generally from noon to 8 p.m. We ask that you be considerate of other patients and speak quietly during visits.

Tests:
Before you leave the hospital, you will have another echocardiogram (an ultrasound test of your heart) to check the valve’s position and a chest x-ray. You also may have some more blood tests.

Plan Now for Going Home
• Start planning for your return home the moment you know you will be having the TAVR procedure. This planning is one of the most important things you and your family can do to help us make your procedure a success.
• Before you come to the hospital, you and your family will work with our healthcare team to coordinate your return home.
• We need to make sure you are prepared to go home before you go into the hospital.

Key points to plan for:
Getting home:
You must make your own arrangements for your trip home from the hospital. This includes road transport, flights and accommodation reservations and payment. Even if you were brought to the hospital by ground or air ambulance you must arrange for your return home. Ambulance services cannot be used to return people to their homes. We suggest you arrange to have someone travel with you for the trip home.

Help at home:
• You will need help when your first go home. It is hard to predict how much help you will need, and for how long. It is best to plan ahead so that you are sure to have the help you need at home. Most people who have TAVR say it takes them a month or two to fully recover.
• We suggest you arrange to have someone stay with you for the first week (or longer) to help you as you recover.
• If you are from outside of the greater Akron area, we suggest you stay one night close to the hospital before your trip home.
• If you do not have family or friends to help, you may qualify for home health services. If support at home is a concern, ask to speak to one of Summa’s social workers to get more information about home health services before you come to the hospital.
• We will plan on seeing you back in the valve clinic in less than one week after your hospital discharge. Please make arrangements for someone to drive you.
# Meet the Heart Valve Clinic Care Team

Summa’s multidisciplinary team of heart and vascular specialists treat heart valve conditions with a collaborative, personalized approach to caring for patients.

### Interventional Cardiologists

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<th>Position</th>
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<tr>
<td>William B. Bauman</td>
<td>M.D.</td>
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<tr>
<td>Peter M. Bittenbender</td>
<td>M.D.</td>
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<tr>
<td>Justin M. Dunn</td>
<td>M.D.</td>
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### Cardiothoracic Surgeons

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<tr>
<td>Robert A. Baranek</td>
<td>M.D.</td>
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<tr>
<td>Eric A. Espinal</td>
<td>M.D.</td>
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<tr>
<td>Michael S. Firstenberg</td>
<td>M.D.</td>
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### Clinic Coordinator

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<th>Name</th>
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<tr>
<td>Michelle Michel</td>
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<td>CNP</td>
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### Geriatrician

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<th>Name</th>
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<tr>
<td>Maryjo L Cleveland</td>
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<td>M.D.</td>
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### Valve Clinic Staff

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<th>Name</th>
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<tr>
<td>Julie Wynne, RN</td>
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<td>Karen Noel, Secretary</td>
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*Image descriptions and contact information not included.*
My Questions

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