TAVI: Trans-catheter Aortic Valve Implant

A guide for your procedure

You and your family can use this guide to prepare for your TAVI procedure at Toronto General Hospital, and for your recovery at home.

When you come to the hospital for your appointments, please bring:

- This booklet
- Your medications in their pharmacy containers
- Your Health Card (OHIP)

Your name:

Your Cardiologist:

Your Cardiac Surgeon:

Date of your TAVI procedure:

When to come to the hospital for your procedure:

Our goal is to let you know the date of your procedure well ahead of time. However, we may call you on short notice if:

- There is a cancellation and we may be able to do your procedure sooner
- There is an emergency and we need to postpone or cancel your procedure
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Questions about TAVI

What is the TAVI procedure?

Trans-catheter Aortic Valve Implant (TAVI) is the name of the procedure recommended to replace your unhealthy heart valve.

<table>
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<th>Medical word</th>
<th>What it means</th>
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<tr>
<td>Trans-catheter</td>
<td>We take the valve and squeeze it on top of the delivery system which is a thin flexible tube called a catheter.</td>
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<tr>
<td>Aortic</td>
<td>Refers to the aorta, a large artery that carries blood away from the heart to the body.</td>
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<tr>
<td>Valve</td>
<td>Valves control the flow of blood through the heart. The aortic valve has three leaflets that open to direct blood out of the heart into the aorta and close to prevent blood from flowing back into the heart.</td>
</tr>
<tr>
<td>Implant</td>
<td>To put something into the body.</td>
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You will get a new heart valve made of natural tissue (from the heart of a cow or pig). The tissue is attached to a flexible, metallic mesh frame.

As technology changes, new valves will become available. We will always choose the best valve available to you at the time.
How is TAVI done?

The new valve is attached to the end of a long, thin tube called a catheter.

The doctor makes a small opening (puncture) for the catheter using the method that is best for you:

- **Transfemoral TAVI**: The opening is made in a large artery in your groin (femoral artery). The doctor threads the catheter through the artery and up to your heart.

- **Transapical TAVI**: The incision is made in the left side of your chest between the ribs. The doctor inserts the catheter through the opening and into your heart.

- **Direct Aortic**: The surgeon opens all or part of the breast bone in the middle of the chest. A catheter is inserted into the large artery above the heart.

X-ray imaging helps the doctor see your heart and guide the catheter.

The catheter carries the new valve into your heart, where it is put inside your unhealthy valve.

The mesh frame is expanded, pushing the leaflets of your valve out of the way and securing the new valve in place. Then, the catheter is removed.

**Your new valve begins working right away to direct the flow of blood out of your heart.**

During the procedure, your heart will continue to beat on its own. A heart or lung bypass machine is not needed.

**By implanting a new valve, we hope to:**

- Relieve your symptoms
- Help your heart work better
- Improve the quality and length of your life
Your care while waiting for the procedure

Who looks after my health while I am on the waiting list?
Your regular doctors are responsible for your medical care while you are waiting for the procedure.

✓ Continue to have your health checked by your family doctor.
✓ Continue to see specialists for your heart and other medical conditions.

What if my health changes while I am waiting?
If your heart symptoms gradually get worse, but your overall health does not change too much, your regular doctors will continue to provide your care.

If there are sudden changes in your health, call the TAVI Program Office at 416-340-4800, ext. 6153

If your health suddenly gets worse:
• Follow your doctor’s instructions
• Ask a family member to call us

If you are admitted to hospital:
• Ask the doctor or nurse to call us

Once we have been called we will contact your regular doctors and follow your progress. Depending on your situation, we will let you know if the changes in your health affect the date of your procedure.
Preparing for the procedure

When should I see the dentist?
It is important to have a dental check-up before having the TAVI procedure. Make an appointment with your dentist, if you haven’t had one in the last 6 months.

If you need teeth removed or treatment for gum disease, this must be done before the TAVI procedure. We cannot go ahead with your procedure until this is done.

If you have no teeth, you do not need to see the dentist.

Ask your dentist to fax a letter or report of your dental visit to the TAVI Program Office. FAX 416-340-5143

When do I visit the Pre-admission Clinic?
You will have an appointment at the Pre-admission Clinic 2 weeks before the date of your TAVI procedure.

• Pre-admission Clinic visits usually start at 7:00 am and last for 3 to 4 hours.
• During your visit you will have blood tests and meet with members of the health care team.
• You will have other appointments later the same day.
• Please bring your medications in their original containers and your Health Card (OHIP) to the Pre-admission Clinic visit.
<table>
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<tr>
<th>Team member</th>
<th>Responsibility</th>
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<tr>
<td>Anesthesiologist</td>
<td>• This doctor will discuss the risks and things to consider related to your general anesthesia during the procedure or the awake/sleep TAVI.</td>
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<tr>
<td>Vascular Surgeon</td>
<td>• This doctor will assess the blood vessels in your groin to make sure they are large enough for the catheter if you are having a Transfemoral TAVI.</td>
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<tr>
<td></td>
<td>• You will meet the vascular surgeon on the 6th floor, Peter Munk Building.</td>
</tr>
<tr>
<td>Pre-admission Nurse</td>
<td>• The nurse will do a complete health assessment and will explain how to prepare for the procedure.</td>
</tr>
<tr>
<td>Pharmacist</td>
<td>• The pharmacist will review all the medications you are taking.</td>
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If you take the blood thinner Warfarin, we will let you know if you need to be seen in the Thrombosis Clinic. The Thrombosis Team will tell you when to stop taking Warfarin before your TAVI procedure.

**Please tell us about any health problems we might not have asked about.**

**We especially want to know if you have frequent bladder infections or an enlarged prostate.**
What plans should I make for my return home?

You must start planning for your return home before your admission to the hospital. You will need to make arrangements for help at home after the procedure.

Please arrange for a relative or friend to:

• Drive you home from the hospital.
• Stay with you for a few days until you are comfortable doing your normal activities (or you stay with them).

If you have no one to help and you would like to see a Social Worker during your Pre-admission visit, please call 416-340-4800 ext. 6153.

When should I stop eating and drinking?

Do not eat or drink anything after midnight the night before the procedure.
Your admission to the hospital

**DO NOT HAVE ANYTHING TO EAT OR DRINK on the morning of your procedure.**

Take only the medication you were told to take, with a sip of water.

**When should I come to the hospital?**

Most patients are admitted to Toronto General Hospital the same day as their TAVI procedure.

Some patients need to be admitted to the hospital 1 day before their TAVI procedure. If this is the case, we will tell you where and when you will be admitted.

On the morning of your admission, come to the **Surgical Admission Unit** on the second floor of the Norman Urquhart Wing. The time is written on the front of this booklet.

**Where to park**

**Elizabeth Street** (Covered parking)

- Use the Elizabeth Street entrance.
- Take the Eaton elevator in the lobby to the 2nd floor.
- Turn right and follow the signs to the Surgical Admission Unit.

**Gerrard Street** (Parking under the hospital)

- Take the Munk elevator from the parking lot to the 2nd floor.
- Follow the signs to the Surgical Admission Unit.
What should I bring?
On the morning of your admission bring:

✓ Your Health Card (OHIP)
✓ All your medications in their pharmacy containers, or a list of the medications you are taking

Do not bring valuables to the hospital.

Bring few personal belongings when you are admitted. This is because your first day of recovery will be in the Intensive Care Unit where there is limited storage space. When you are well enough to go to the ward, your family can bring more of your personal belongings.

How long will I stay in the hospital?
You can expect to stay in the hospital for 1 to 7 days after your procedure.

How long you stay will depend on:
• Your general health
• The results of the procedure
• Your recovery

Our plan is for you to go home as soon as we feel it is safe for you to leave. Most people recover faster if they do not stay in hospital longer than needed.

We will work with you and your family to plan your return home.
The TAVI procedure

What happens before the procedure?

Giving consent

- The potential risks and benefits of the TAVI procedure were explained when you were assessed for the procedure. If you have questions, please write them down.
- The TAVI doctors will see you the morning of your procedure and answer any questions that you have. Then, they will ask you to sign the consent form. This gives the doctors permission to do the procedure.
- Some people find it hard to read and take in the information on the form right before the procedure. Please feel free to ask us to read it to you.

Providing contact information

- Please tell us your contact person or substitute decision maker.
- Let us know if you have a power of attorney for personal care.

Going to the operating room

- We mark your operative site with a marking pen.
- The nurse may give you some medication with a sip of water. This helps you to relax and may make you feel sleepy.
- You are taken to the operating room for your procedure.
- We will try to do your procedure with sedation and without a ventilator. Certain factors may make this less desirable (such as restless leg syndrome) and you will need a full anaesthetic and a ventilator.
- Your family can wait in the Surgical Waiting Room on the 3rd floor.
**What happens during the procedure?**

The anesthesiologist controls your sedation and checks your vital signs to make sure you do not feel any pain during the procedure.

- **Transfemoral procedure:** You will have an intravenous (IV), temporary pacing wire, and a sheath or catheter in one leg that was used to inject contrast during the procedure. You will have a bandage on the other leg where the valve entered your body. We may access an artery in the wrist rather than the leg to inject contrast. In this case, after the procedure you would have a pressure band over the wrist that is released slowly by the nurse in the recovery area.

- **Transapical/Direct Aortic procedure:** You will have an intravenous (IV), temporary pacing wire, breathing tube, Foley catheter to drain urine, a sheath or catheter in your leg to inject contrast, a chest tube and a bandage over the incision on your chest.

When everything is ready, the doctor will implant your new heart valve. During the procedure you are watched closely by the TAVI team.

At the end of the procedure:

- The pacing wire and breathing tube may be removed in the hybrid operating room or taken out later in the Intensive Care Unit.
- In some patients, the conducting system is affected by the new valve (the heart rate is too slow) and a permanent pacemaker may be needed at the time of the procedure or soon afterward during the admission.
- The catheter insertion site is closed usually without surgery. Sometimes, technical factors make this impossible and the vascular surgeon will need to do an open surgical repair of the artery.

**The TAVI procedure usually takes 1.5 to 2 hours to complete.**

**What happens after the procedure?**

You are taken to the Coronary Intensive Care Unit (CICU) or the Cardiovascular Intensive Care Unit (CVICU). Both units are on the 2nd floor of Eaton Wing. The doctor will go to the Surgical Waiting Room to speak with your family.
Recovering in intensive care

What care will I need after my TAVI procedure?

After the TAVI procedure, you need close monitoring.

You will stay in the CICU or CVICU overnight or longer if needed.

- A nurse is with you at all times until you are awake and breathing on your own.
- If you have a breathing tube in place, it is taken out as soon as you are awake and following directions.
- The nurse checks you regularly to make sure you are comfortable. Let the nurse know if you are having pain.
- The nurse regularly checks your catheter insertion site (femoral artery).
- The nurse reminds you to keep your legs straight the first 4 hours after the procedure. This is very important to prevent bleeding from the insertion sites in your groin. Also, there may be some intravenous tubes or temporary pacing wire in your groin.
- The nurse helps you gradually increase your activity, from sitting up in bed to sitting in a chair.
- When you are fully awake, the nurse gives you clear fluids to drink. When you are drinking well, you can start eating food.
- The special monitoring equipment will be removed when you are ready to go to the ward.

Can I have visitors?

Yes, visiting hours in the CICU and CVICU are 11:00 am to 9:00 pm.

Your family can wait in the family lounge outside the units (next to the Eaton elevator). A volunteer will arrange for your family to visit you.
Recovering on the Inpatient Unit

What care will I need on the ward?
If you had a Transfemoral TAVI, you will go to the 5th floor, Munk Building. If you had a Transapical TAVI or Direct Aortic, you will go to the 4th floor, Munk Building.

On the Cardiovascular Inpatient Units each nurse cares for several patients, helping them recover and get ready to go home.

A nurse practitioner (NP) may be part of your care team. The NP is a registered nurse with education and experience in caring for patients after cardiac surgery, and their families.

A nurse practitioner:
- Can prescribe medications, order tests and follow your progress
- Has ongoing contact with your doctor
- Helps coordinate your care in the hospital
- Helps deal with concerns about going home

What activities can I do?
You will have help to gradually increase your activity. Each day you will be able to do a little more activity and walk farther.

As your appetite improves, you can have a regular diet. We will provide heart-healthy meals to help you recover.

You will wear a heart monitor that sends a recording of your heart activity to a display that the care team watches.
What tests will I need?
Before going home, you will have these tests:

- Chest x-ray
- ECG (electrocardiogram) – a record of your heart’s electrical activity
- Blood tests
- Echocardiogram – ultrasound images of your heart

What care does my insertion site need?

If the site is in your groin
The nurse will:

- check the site where the catheter was inserted
- teach you what to expect as it heals
- teach you how to care for the site

Tell the nurse or doctor if you notice:

- Bleeding from the site
- A lump that is getting bigger
- An area of redness or swelling that does not get better
- Yellow fluid draining from the site
- Severe pain at the site
- Numbness in your leg that is getting worse

If the site is in your chest
The nurse will change your dressing as needed. The incision will be left open to the air, unless there is drainage.

Wash it gently every day with mild soap. Rinse with water and pat dry.
Tell the nurse or doctor if you notice:

- The incision becomes red and tender
- The incision becomes more painful
- The incision starts to leak or drain yellowish fluid
- You feel unwell or think you may have a fever

**What plans are made for when I leave the hospital?**

Your care team will assess your condition and talk with you and your family about how you are recovering. Together you will decide when you are able to go home. This is called **discharge planning**.

When you know your expected date of discharge, tell the people who are going to drive you home and stay with you.

If you were very ill before the procedure, it will take you longer to get back your strength.
Recovering at home

Most people say it takes 1 month to fully recover.
As each person is different, recovery times can vary.

What can I expect as the insertion site heals?
Check your insertion site every day. The chart below tells you what normal healing looks like and what warning signs to watch for. If you notice any warning signs, see your family doctor.

After a Transfemoral procedure, the pain in your groin will gradually get better as you heal. You may have a bruise that gets quite large, but it will go away.

After a Transapical procedure, you may have pain in the incision area. If you have pain, take your prescribed pain medication regularly so that you can move around comfortably. As the pain gets better, take the medication less often until you no longer need it.

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<th>What is normal?</th>
<th>What are warning signs?</th>
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<td>• slightly red, swollen and tender</td>
<td>• any area of redness or swelling that does not get better</td>
</tr>
<tr>
<td>• a bit lumpy or bumpy</td>
<td>• a lump that is getting bigger</td>
</tr>
<tr>
<td>• occasional clear drainage</td>
<td>• yellow or pink drainage</td>
</tr>
<tr>
<td>• pain gets better gradually</td>
<td>• pain does not get better or is severe</td>
</tr>
<tr>
<td>• bruising</td>
<td>• fever – a temperature of 38.5 °C (101 °F) or higher</td>
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Call your family doctor or call 416-340-4800 ext. 6153
Do I need medication after a valve implant?

You may need to take a blood thinning medication such as ASA (Aspirin®) or clopidogrel (Plavix®). Please talk with your pharmacist if you have questions about your medications or how to take them.

If you are already on blood thinners, we will make sure the prescribed medications are right for you before you go home.

To avoid possible drug interactions, check with your family doctor or pharmacist before taking any new medication.

What activities should I do?

Before the procedure, your physical activity may have been very limited. So at first, activity may make you feel tired and need to rest. As you gain strength and confidence, you can gradually increase your activity.

Walking is important for your recovery. During the first week at home try walking around your home or taking a short walk outside each day. Then, gradually increase your activity by walking a little longer each day.

Until your follow-up appointment, please take it easy. Do not lift or carry anything heavy such as groceries. Avoid strenuous activities such as gardening, vacuuming and swimming.

When you can return to work will depend on the type of job you do and your recovery. Please discuss your plans to return to work with your cardiologist or cardiac surgeon at your follow-up appointment.
Can I bathe or shower?
You may shower when you get home. After the shower, gently pat the insertion site dry with a clean towel. Do not put cream or powder on it. Your doctor will let you know when you may have a bath.

Can I drive?
Do not drive for 14 days after your procedure. If you have any concerns about driving, please talk to us. If you have had a complicated admission, we will let you know when it is safe for you to drive again.

Can I travel?
Before flying or taking a long trip, please talk with your cardiologist or cardiac surgeon.

Should my health care providers know that I have a new heart valve?
Yes, tell all your care providers that you had a TAVI procedure and have an artificial heart valve. This includes:

- your family doctor, dentist and any other doctor you see
- your pharmacist
- your physiotherapist, visiting nurses and home care providers

We will give you a card to carry in your wallet. The card has the type of valve you have and when it was implanted.

You may also wish to wear medical identification to let health care providers know that you have an artificial heart valve. Medical alert products (such as bracelets, necklaces or watches) can be ordered from MedicAlert Foundation Canada at 1-800-668-1507 or www.medicalert.ca.
When do I need follow-up appointments?

We will give you a follow-up appointment with your cardiologist or cardiac surgeon 2 months after your TAVI procedure. You will have an echocardiogram on the same day.

At your follow-up appointment, ask your doctors any questions that you have about your heart health, physical activity, sexual activity, work and travel.

You will have follow-up appointments every year, around the anniversary of your TAVI procedure.
When to call the TAVI Program office

Please call us if you are admitted to hospital after your procedure or if your contact information changes.

TAVI Program Office: 416-340-4800, ext. 6153

When to get medical help

After you go home, your regular doctors will provide your health care. The TAVI team will see you once a year at your follow-up appointment.

Call the TAVI office at 416-340-4800 ext 6153 (or outside of normal business hours page the Interventional/Structural Fellow on call through Locating at 416-340-3155) if you have ANY of the following within 2 weeks from going home:

- A lump that is getting bigger or increasing pain at your insertion site
- Fever – a temperature of 38.5 °C (101.3 °F) or higher
- Signs of skin infection – any area that has swelling, redness, warmth or drainage (yellow or pink)

Call your family doctor if you have:

- Signs of a bladder infection – burning, urgency, urine that is cloudy or smells bad, back pain
- You feel ill and are concerned

Call 911 or go to your nearest Emergency Department if you have ANY of the following:

- Sudden chest pain
- Irregular heart rate
- Numbness or weakness in your legs more than usual
- Sudden shortness of breath
- Loss of vision
Healthy living with a new heart valve

How do I keep my new valve healthy?

To stay healthy and protect your new heart valve, it is important to prevent germs such as bacteria from entering your body. Bacteria can get into your blood if you have an infection or wound in another part of your body. For example, if you have an infection in your mouth or on your skin, bacteria can easily get into your blood. The bacteria can cause a serious infection that damages your heart tissue and valves.

A healthy mouth

Do not have any dental work (cleaning or treatment) for 6 months after your TAVI procedure, unless you have a tooth ache or abscess. **Visit your dentist twice a year after your TAVI procedure.** Tell your dentist that you had valve surgery.

**Important:** You will need to take antibiotic prophylaxis before any dental procedure above the gum line, including dental cleanings, for life.

Healthy eating

For more information about healthy eating:

- Read UHN’s pamphlet ‘Your Heart and Sodium (salt) Restriction’. Visit www.uhnpatienteducation.ca.
- Visit the Dietitians of Canada website: www.eatrightontario.ca Enter ‘salt’ in the search box for a list of helpful articles.
- Speak with a Registered Dietitian for free at 1-877-510-5102

Healthy skin

One of the best ways for you and your family to stay healthy is to wash your hands often. But keep your skin clean and dry. Check for any breaks or cuts in your skin.