

# **Preparing for your Mesenteric Artery Aneurysm Surgery**

**Michigan Medicine  
Frankel Cardiovascular Center**



## Michigan Medicine Phone Numbers

Billing .....	855-855-0863 734-615-0863
Call Center .....	888-287-1082
Vascular Surgery (use Call Center) .....	888-287-1082
Cardiovascular Operating Room Desk .....	734-232-4553
Office of Clinical Safety (comments) .....	877-285-7788
Emergency Department .....	734-936-6666
Guest Assistance Program (GAP) (accommodations) .....	800-888-9825
Hospital Operator .....	734-936-4000
Lost & Found .....	734-936-7890
Mardigian Wellness Resource Center .....	734-232-4120
Parking & Transportation .....	734-764-7474
Registration & Insurance <sup>4</sup> Verification .....	866-452-9896
Med-Inn (hotel) .....	800-544-8684 734-936-0100
Tobacco Consultation Services .....	734-938-6222
Units (Patient Care):	
CVC-4 ICU .....	734-936-6514
CVC-5 Cardiac Surgery .....	734-232-4772
CVC-2A Cardiac Procedure Unit.....	734-232-4200

### Other:

Michigan Quit Line (Smoking) .....800-784-8669

### Address (mail):

Frankel CVC (room number/unit if known) or UH (room number/unit if known)

Person's Name

University of Michigan Health System

1500 E. Medical Center Drive

Ann Arbor, MI 48109

### Building Location (visiting):

Samuel and Jean Frankel Cardiovascular Center

East Ann Street & Observatory Street

Ann Arbor, MI 48109

## **Table of Contents:**

<b>What are my pre-operative medication instructions?.....</b>	<b>4</b>
<b>How can I prepare for my hospital stay? .....</b>	<b>6</b>
<b>How will I prepare for surgery? .....</b>	<b>7</b>
<b>What happens when I arrive at the hospital?.....</b>	<b>9</b>
<b>What will my hospital stay be like? .....</b>	<b>10</b>
<b>What can I expect on the day of discharge? .....</b>	<b>15</b>
<b>When do I need to seek emergency care? .....</b>	<b>16</b>
<b>When do I need to call my doctor? .....</b>	<b>17</b>
<b>What type of follow up care will I receive? .....</b>	<b>18</b>
<b>What steps should I take to monitor my health at home? .....</b>	<b>18</b>
<b>How will I manage my pain and comfort at home?.....</b>	<b>20</b>
<b>What are my medication instructions?.....</b>	<b>21</b>
<b>How do I handle my emotions after I get home?.....</b>	<b>21</b>

## What is Mesenteric Artery Aneurysm Surgery?

**Mesenteric arteries** carry oxygen rich blood to your gastrointestinal tract (stomach, intestines, colon and rectum) to carry out the process of digesting your food. An **aneurysm** is a term used to describe the ballooning or enlargement of these arteries. If an aneurysm forms and grows too large in your mesenteric arteries, they could tear or burst, and result in death.

Your doctor recommend will recommend aneurysm surgery to remove or replace the damaged section of your mesenteric artery with a synthetic tube (known as graft). The graft, typically made of Dacron<sup>®</sup> or Gore-Tex<sup>®</sup>, is sewn into place.

## What are my pre-operative medications instructions?

A member of your health care team will review your medications at your history and physical visit. They will tell you which medications to stop before surgery, and which to take on the morning of your surgery with sips of water.

**Insulin:** Your health care team will let you know if there are any changes to your dose(s) the night before and/or the day of your surgery.

**Do not** smoke for 2 weeks before surgery

## What about my blood thinners?

- Your care team will talk to you about your blood thinners. Tell them if you are on a blood thinner such as: warfarin (Coumadin<sup>®</sup>), rivaroxaban (Xarelto<sup>®</sup>), dabigatran (Pradaxa<sup>®</sup>), or apixaban (Eliquis<sup>®</sup>), edoxaban (Lixiana<sup>®</sup>). You will have to **stop taking** your blood thinner. You may have to take a different blood thinner instead.
- Continue to take aspirin or clopidogrel (Plavix<sup>®</sup>) unless your surgeon tells you not to.

**What about over the counter medications and supplements?**

Below are common medications and supplements you need to discontinue before your procedure. Here are a few general rules that you should follow:

- **14 days before surgery:** stop taking Coenzyme Q10 (CoQ10)
- **7 days before surgery:** stop taking Non-Steroidal Anti-Inflammatory Drugs (NSAIDs):

Advil® (ibuprofen)	Aleve® (naproxen)	Anaprox® (naproxen)
Arthrotec® (diclofenac)	Cataflam® (diclofenac)	Clinoril® (sulindac)
Daypro® (oxaprozin)	Disalcidv® (salsalate)	Feldene® (piroxicam)
Haltran® (ibuprofen)	Lodine® (etodolac)	Medipren® (ibuprofen)
Midol® (ibuprofen)	Motrin® (ibuprofen)	Nalfon® (fenoprofen)
Naprelan® (naproxen)	Naprosyn® (naproxen)	Nuprin® (ibuprofen)
Orudis®(ketoprofen)	Relafen®(nabumetone)	Tolectin® (tolmetin)
Trilisate®(salicylate)	Voltaren®(diclofenac)	

- **7 days before surgery:** stop taking weight loss products and nutritional or herbal supplements:

Alpha-Lipoic Acid	Acetyl- l-carnitine	Cinnamon	Chamomile	Creatine
Echinacea	Ephedra	Fish Oil	Garlic	Ginger
Gingko Biloba	Ginseng	Glucosamine-Chondroitin	Glutamine	Goldenseal
L-carnosine	Licorice	Kava Kava	Milk Thistle	Multivitamin
Omega-3	Resveratrol	Skullcap	St. John's Wort	Vitamin E

**Note:** the medications listed are selective and do not include all medications that affect bleeding. You should always follow your health care team's directions about taking medications.

### **How can I prepare for my hospital stay?**

- Review the preoperative folder and bring it with you the hospital. Include the light blue Blood Bank form if indicated.
- Assign a family member or friend as your driver, you will not be able to drive yourself home. Taking a cab or bus alone is not acceptable unless someone you know is with you.
- **Quit smoking and vaping!** The sooner you quit before surgery, the better. People who smoke or vape up until the day of surgery have a higher risk of developing complications during and after surgery. If you continue to smoke/vape you will be more likely to have:
  - A longer stay in the hospital
  - A greater chance of needing intensive care
  - Increased risk of poor wound healing
  - Increased risk of death

If you want assistance to quit smoking before surgery, ask for a referral to the MHealthy Tobacco Consultation Service or call them yourself at **(734) 998-6222**.

Other resources:

- The Michigan Tobacco Quit line: 1-800-QUIT-NOW (free resource)
- The Truth Initiative: [www.becomeanex.org](http://www.becomeanex.org)
- US Department of Health and Human Services: [www.smokefree.gov](http://www.smokefree.gov)

### **What do I bring to the hospital?**

- Bring a copy of your advanced directive and insurance cards.
- Plan on bringing any special equipment that you use at home:

- Glasses, dentures and hearing aids with storage cases. Be sure to label these items with your name.
- CPAP machine if you have sleep apnea.
- Walker or cane, labeled with your name.
- Leave all jewelry at home. Including wedding bands, hair clips, body piercings, earrings and watches.

Pack a suitcase with these items for your family/friends to bring to you after your surgery:

- Loose fitting clothing. Button down shirts are preferred.
- Robe.
- Comfortable walking shoes.
- Toiletries: toothbrush, toothpaste, deodorant, comb, etc.
- A list of the medications you are currently taking including vitamins and herbal supplements. Do not bring the actual medications with you.

## **How will I prepare for surgery?**

Instructions for **the day before** surgery:

- **Do not** drink alcohol 24 hours before surgery.
- On the last business day (Monday-Friday) before your surgery, you will need to confirm the day and time of your surgery. Make sure you follow these steps:
  - Call the surgery phone line at **(866) 983-9090** between 7:30am and 11:30am.
  - If your surgery is on Monday, call the Friday before. If your surgery is the day after a holiday, call on the last business day (M-F) before the holiday.
  - On the answering machine, you should leave your name and phone number. Be sure to spell your name clearly and slowly.

- A preoperative nurse will call you back in the afternoon before 5:00pm to give you the following instructions:
  - The time your surgery starts and what time you should arrive the day of your surgery.
  - When to stop eating food and drinking liquids.
  - Medications you should take on the day of surgery.

### **Who do I contact if I'm not feeling well the day before my procedure?**

Report any symptoms of flu, cold, infection, chest pain, difficulty breathing or black/bloody stools to your doctor. It is important that you be in your best health possible for your procedure.

- To report any of these symptoms before 4:30pm call **(888) 287-1082** Monday - Friday and ask to speak to the Vascular Surgery Nurse.
- To report symptoms after 4:30pm, please call **(866) 983-9090** and leave a message.

### **What activities should I avoid after midnight the night before my surgery?**

- **Do not eat** gum, hard candy, or food of any kind
- You may have sips of water with your morning medications up to (2) hours before your arrival time.

### **How do I shower and get ready for my surgery?**

You need to shower on the night before and morning of your surgery using Chlorhexidine (CHG) 4% antiseptic soap which is a surgical soap that reduces the amount of germs on your skin.

1. Take a shower **the night before** your surgery.
2. Wash your face using regular soap.
3. Wash your hair using regular shampoo. Make sure to rinse your hair completely after shampooing.



4. Wash your body from the neck down using the chlorhexidine body wash for at least 5 minutes with a freshly-laundered wash cloth. Do the following:
    - a) First, wash **your surgical site** area and all surrounding skin with the CHG soap.
    - b) Then wash your underarms, chest, under your breasts, stomach/belly button, hips, groin and buttocks.
    - c) Rinse thoroughly.
      - **Do not** use the body wash on your face, eyes, ears, mouth or hair.
      - **Do not** use in your genital area (“private parts”).
  5. Rinse your body completely and pat your skin dry with a freshly laundered towel.
    - **Do not** apply make-up, deodorant, lotions, sprays, gels, creams, ointments or powders after showering with the CHG soap.
    - After showering, use freshly-laundered bed linens.
  6. Put on clean underwear, socks and clothing.
  7. **On the morning** of your surgery, use a new freshly-laundered washcloth and towel and repeat steps 1-6.
- **Remove** nail polish from your hands and feet.
  - **Do** brush your teeth the morning of surgery.
  - **Do not** wear contact lenses to the operating room.

### **What happens when I arrive at the hospital?**

Please park in Cardiovascular Center Visitor Parking Structure P5.

1. Enter the Cardiovascular Center on Level 3 from the parking structure
2. Take the elevators to Level 4.
3. “Surgery Check In” is on the right hand side after you exit the elevator.

Address to use for GPS directions to the  
Frankel Cardiovascular Center:  
1425 E. Ann St.  
Ann Arbor, MI. 48109

Valet service is available for patients, families, and other visitors for a \$5.00 fee at the circle drive main entrance to the Cardiovascular Center. Valet Service is available:

- Monday through Friday 5:30 a.m. to 7 p.m.
- Saturday and Sunday 8 a.m. to 6 p.m.

### **What will my hospital stay be like?**

After your surgery, you will be admitted to the Cardiovascular Intensive Care Unit or CVC-5 moderate care unit for specialized nursing care. Here our team will continue to help you recover from your surgery. When you arrive to the unit, your nurse and patient care technician will meet you. They will orient you and your family to the unit.

### **Our Visitation Policy**

- In alignment with Michigan Medicine, the Cardiovascular Center welcomes the presence of loved ones.
- Family members are welcome at your bedside 24 hours/day. We want you to feel supported, not only by the care we provide but by your loved one's presence as well.
- "Family" (for purpose of visitation) is defined by you and is usually 1 or more individuals who play a significant role in your life. Family members may be related in any way- biologically, legally or emotionally. Your family member may include a person (s) who is not legally related to you.

- At times, we may ask your family members to step outside of the room if procedures or other necessary patient interventions need to be done. Your family will be welcomed back as soon as possible.

### **What type of monitoring will I need while I am here?**

When you arrive on the unit a portable heart monitor called a telemetry unit, will be attached to your chest. The unit will transmit your heart rate and rhythm to monitors located at your bedside and at the nursing station. This portable monitor allows you to walk in the halls freely. Other care you may receive:

- The nurses and techs will regularly check your blood pressure, heart rate temperature, and procedure site.
- You will have your blood drawn for lab tests
- We will measure how much you drink and urinate. We will provide a container for you to urinate into for measurement. We will also ask that you keep track of the amount of fluid that you drink and report it to your nurse or tech.
- You will be weighed daily.
- A member of your care team will enter your room to assess your needs hourly

### **Pain and discomfort after your surgery**

#### **What kind of pain or discomfort will I feel after my surgery?**

Experiencing pain after surgery is normal. You may be surprised where you feel pain after surgery. Often your incision site is not the only area of discomfort. Please tell a member of your healthcare team about the pain you have, which can include:

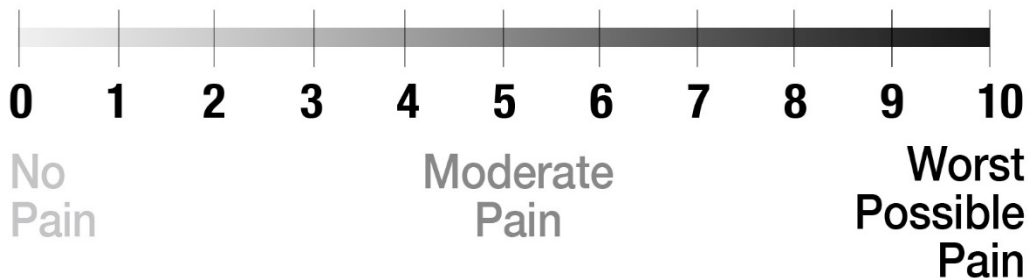
- **Muscle pain:** You may feel muscle pain in your chest, back neck, shoulders or legs. This is from lying on your back on the operation table.
- **Incision discomfort:** You may feel numbness along your incision line, jaw and your earlobe.

- **Throat discomfort:** Your throat may feel sore or you may notice changes in your voice (hoarseness).

### **What can I do to help keep my pain under control?**

You doctor will order effective medications to keep your post-surgical pain under control. Your nurse will ask you about your pain regularly throughout your recovery. You shouldn't hesitate to ask for pain medication if needed. Throughout your hospital stay, the nurses will monitor your need for pain medication. You can use the numeric pain rating scale below to measure your pain. This is a helpful tool you can use to describe how much pain you are feeling and to measure how well treatments are relieving your pain. You will be asked to rate your pain using a 0-to-10 pain scale. 0 means "no pain." 10 means the "worst pain possible."

## **Numeric Pain Rating Scale**



### **Why is it so important to control pain after my surgery?**

Having good pain control not only helps you feel more comfortable, but also helps you recover faster and may reduce your risk of developing certain complications, such as pneumonia and blood clots. If your pain is well managed, tasks such as sitting, walking, coughing and eating will be easier.

### **What exercises will I do after Surgery?**

Exercise is an important part of the recovery process after surgery. Below are activities you will be expected to perform during your hospital stay:

- **Deep breathing and coughing**

Use your breathing machine (Incentive Spirometer) 10 times every hour while you are awake. For example, if you like watching TV, you should be using your Incentive Spirometer 2-3 times during each commercial break.

**Tips when using the incentive spirometer:**

- Do not get discouraged if you do not reach the number marked for you. You will improve with practice as your body heals.
- If you start to feel dizzy or light-headed, remove the mouthpiece from your mouth and take some normal breaths. Once you feel better, continue using the incentive spirometer.



How to Use an Incentive Spirometer

[By BruceBlais - Own work, CC BY-SA 4.0](#)

- **Activities on the day of surgery:**

- Get out of bed to a chair in the evening (if able)
- Wear your Sequential compression devices (SCDs) while in bed or sitting in a chair

- **Activities for the rest of your hospital stay:**

- Sit in the chair 3 times a day
- Walk the hallway 4 times a day
- Do Physical Therapy exercises (as needed)
- Wear SCDs when in bed or sitting in a chair

- **Repositioning**

To prevent pressure injuries during your hospital stay, you need to change your body position. The following recommendations will help you reposition yourself:

**While in bed:**

- Turn your body at least every 2 hours from side to side.
- Keep the head of your bed at a 30-degree angle or lower to prevent too much pressure on your bones.
- Place a pillow between your ankles and knees when lying on your side.
- Place a pillow under your lower legs to elevate the heels when lying on your back.

**When sitting:**

- Change your position every 15 minutes by tilting your body forward or to the side so that your bottom lifts off the seat.
- Stand up or do “pushups” by using arms to raise off the seat every hour.

**What will my diet be after surgery?**

Your food will be low in fat and cholesterol and will not have any added salt or sugar. It may taste different than what you are used to eating at home. It is very important for you to eat to improve the healing process.

**Guidelines:**

Eat a balanced diet of:

- Carbohydrate-rich foods high in fiber
- A variety of fruits and vegetables
- Low-fat dairy products
- Lean meats
- Protein-rich foods very important for wound healing. Good source of protein includes: fish, eggs, dairy, beans and nuts.

Room service is available at any time of the day. Your nurse will bring you a menu so you can choose what you would like to eat. Your nurse will check to see if your ordered food will assist you if needed.

If you are diabetic or insulin dependent, your nurse will ask you to call them before you eat so they can check your blood sugar. It is fine for your family to bring food from home but it should be low in salt and low to moderate in fat.

Many patients experience constipation after surgery due to inactivity and pain medication. Eating a diet rich in fiber, drinking enough fluids, walking the halls and taking a stool softener will help your bowels move. Sometimes a suppository or laxative is needed to help this process along.

Our registered dietitians are food and nutrition experts who are available to discuss heart healthy choices and salt alternatives or reduction. They provide sound, easy-to-follow nutrition advice. If you are interested in speaking to a dietitian, ask your nurse to arrange a visit.

### **How will I care for myself while in the hospital?**

- Wash your hands frequently or use hand sanitizer or the sanitizer wipes that we provide to you. Hand hygiene is very important to decrease your risk of infection.
- Bathe daily with the assistance of a staff or family member.
- Continue to wear your compression stockings (sometimes referred to as TED hose). These will help with swollen and achy legs.

### **What can I expect on the day of discharge?**

- Discharge time from the hospital may be as early as 9:30am. Please check with your nurse to determine the anticipated time of your discharge.

- Ask a family member or friend to arrive at 9:00am to review final discharge instructions with you and your nurse.
- Your case manager nurse will be in contact with you to explain your final discharge plans.
- Your nurse will review all discharge instructions with you. During this time, ask any questions that you may have about your care after discharge.
- Be sure to understand:
  - Your medications and prescriptions
  - Incision care
    - Before you go home, look at your incision in the mirror so you will know if there are any changes when you check it at home.
  - Activity and restrictions
  - Diet
  - Reasons to call your doctor
  - Follow up appointment information
- At home you will need to monitor your temperature and weight until your next appointment. Please make sure that you have a thermometer and a scale before you are discharged.
- If you have a long drive home, make sure to get up and stretch at least once an hour to help prevent blood clots.

## **When do I need to seek emergency care?**

### **Call 9-1-1 immediately if:**

You have any of the following **symptoms of a stroke**:

- Sudden confusion or trouble speaking or understanding others
- Sudden trouble seeing in one or both eyes
- Sudden numbness or weakness of the face, arm, or leg, usually on one side of your body
- Sudden trouble walking, dizziness, or loss of balance or coordination



- Sudden or severe headache with no known cause
- Sudden or severe headache with no known cause

If you have any of the symptoms list below:

- Sudden onset of chest pain
- Shortness of breath not relieved by rest
- If your legs feel numb, tingly, cold or look blue
- You believe you are experiencing a true emergency

### **When do I need to call my doctor?**

- Under the tongue temperature above 101.5° F
- Bleeding, redness, swelling, increased pain or foul smelling drainage near your incision site
- Incisions that open up after you leave the hospital
- Increased swelling in your legs or ankles
- Weight gain of more than 5 pounds in 3 days or weight loss of 7 pounds or more before your follow up clinic visit
- Increased shortness of breath/difficulty breathing
- Trouble urinating
- Lightheadedness (feeling that you are about to faint or "pass out.")
- Nausea, vomiting or diarrhea
- Stomach pain or bloating
- Chills or excessive sweating
- A vague feeling that something is wrong

### **What is the number to call?**

- Call (888) 287-1082 Monday through Friday from 8:00am to 4:30pm:
  - Ask to speak to the Vascular Surgery Nurse.
- Call (734) 936-6267 after 4:30pm or on weekends or holidays:
  - Ask the hospital operator to page the Vascular Surgery Medical Resident on call. You will receive a call back from the Resident.

## **What type of follow up care will I receive?**

You will have a post-operative visit in the Vascular Surgery Clinic in approximately 4 weeks after your procedure. If you did not receive an appointment for your return visit before you left the hospital, please call **888-287-1082** to schedule this visit.

## **What steps should I take to monitor my health at home?**

You will need to perform and record the following self-checks daily:

- Check your incisions daily for signs of infection including:
  - Increased redness
  - Tenderness
  - Swelling
  - Warmth or drainage
- Keep your incisions clean and dry.
- Take your temperature each morning before eating or drinking and any time you think you may have a fever.
- Weigh yourself at the same time, on the same scale, in the same clothes, and in the same way each day.

## **Follow these guidelines to care for your incisions while bathing:**

- You may shower after returning home, but don't allow the shower spray to hit your incisions directly.
- Wash your surgical incision(s) with your usual bath soap and water every
- day. Do not scrub your incisions.
- Pat incisions dry and leave open to air.
- Use a freshly laundered wash cloth and towel each time you shower.
- **Do not** put any creams, lotions, powders or ointments on your surgical Incision(s) until they heal.
- **Do not** soak in a bathtub, hot tub or swim in a pool for the next 4 weeks.

### **What are other things I should keep in mind?**

Your surgeon will replace your aneurysm with a long tube made of man-made (synthetic) graft material. You should take a preventive antibiotic before invasive procedures to prevent infection in this graft. These procedures include: dental appointments, diagnostic procedures such as colonoscopy or surgical procedures. The doctor or dentist recommending or performing the procedure will prescribe the antibiotic.

### **What are my activity instructions?**

After your surgery, you should gradually and consistently increase your physical activity. You may tire more easily than before surgery. This is normal. Your strength and energy level will increase as your body heals.

### **Restrictions**

- **Do not** lift, push or pull any object over 10 pounds for after surgery. As a reference, a gallon of milk weighs approximately 8 pounds. Your doctor will let you know when this precaution is lifted.
- **Do not** return to work until you have seen your doctor at the first follow up clinic visit.
- **Driving:**
  - Your doctor will discuss with you when you can drive again.
  - **Do not drive** if you are still taking narcotic (opioid) pain medication.
  - You can ride as a passenger in a car at any time, but, as always, you should wear your seatbelt.

### **Activities**

- Walk every day (find an indoor setting during bad weather).
- You may climb stairs but take them at a slow pace.
- Limit the number of times you take the stairs until you feel well.

- Divide your time and spread activities throughout your day. Do not try to do everything at once.
- Use your incentive spirometer at least four times a day (10 breaths each time) until you return for your clinic visit.

## **How will I manage my pain and comfort at home?**

Your goal at home is to control your pain enough so you can do the things you need to do to heal. Pain is normal after surgery and everyone feels pain differently.

You may receive prescriptions for pain medication (opioids) to take at home. These may or may not be the same pain medications you took in the hospital. *We are careful about using opioid pain medication after surgery because they have been shown to be addictive, may cause you harm, and even cause overdose if used incorrectly or abused.* Michigan law now limits prescribing of pain medication (opioids) for treatment of surgical pain to 7 days. We will work closely with you to create a plan for managing your pain after surgery.

Below are a few tips to help with pain relief:

- Remember to take your pain medication before activity.
- Be sure to get enough rest. If you are having trouble sleeping, talk to your doctor.
- Use pillows to support you when you sleep and when you do your coughing and deep breathing exercises.
- Ask your doctor if it is okay to use over the counter acetaminophen (Tylenol®) or ibuprofen (Motrin®, Advil®).
- Try using alternative methods: heating pads or cold therapy, guided imagery, listening to soft music, changing your position in bed, or massage.

## **What are my medication instructions?**

- When you are discharged from the hospital you will receive a complete list of the medications you should take at home.
- Your medication list will include the following information:
  - Medication name(s)
  - Dose of the medication
  - Number of times to take the medication each day
  - The last time you took each medication
  - The next time that you should take each medication
- Your doctor will give you prescriptions for your recovery before you leave the hospital.
- Have your insurance cards with you to help speed up the filling of your prescriptions.
- Take your medicine exactly as your doctor prescribes.
- Do not take other medication without telling your doctor.
- Keep a current list of your medicines, dosages, and times to be taken in your wallet or purse.

## **How do I handle my emotions after I get home?**

Feeling like yourself again after surgery may take a while. People who have had surgery commonly experience mood swings, feel depressed or down after returning home. You may find yourself crying for no clear reason or feeling more emotional or sentimental than normal. Even though you may feel drained emotionally, follow the guidelines for good self-care. As you resume your normal activities, you should notice gradual improvement in your mood and positive outlook.

- If you find yourself still feeling unmotivated, unusually fatigued, weepy, angry, hopeless, or sad after 3 weeks, be sure to call the CVC Social Worker at **(734) 232-1559** or your Primary Care Doctor to make an appointment to talk about how you are feeling.

- If you have thoughts of hurting yourself call the National Suicide Prevention Lifeline at (800) 273-8255. This service is available 24 hours a day every day. Chat options are also available through their website <https://suicidepreventionlifeline.org/>

Disclaimer: This document contains information and/or instructional materials developed by Michigan Medicine for the typical patient with your condition. It may include links to online content that was not created by Michigan Medicine and for which Michigan Medicine does not assume responsibility. It does not replace medical advice from your health care provider because your experience may differ from that of the typical patient. Talk to your health care provider if you have any questions about this document, your condition or your treatment plan.

Author: Bethany Lee-Lehner, RN, MSN  
Reviewers: Vascular Surgery Clinical Care Coordinators  
Chandu Vemuri, MD  
CVC Control #1143

Patient Education by [Michigan Medicine](#) is licensed under a [Creative Commons Attribution-NonCommercial-ShareAlike 4.0 International Public License](#). Last Revised 01/2020