

Your Guide to Heart Surgery



VANDERBILT HEART



Contents

Stay on Track!

Before surgery: A checklist	2
Pre-operative instructions	4
Before you leave the hospital: A checklist	5
After the hospital: A checklist	6
Weight, blood pressure, temperature, and heart rate diary	8

Before Surgery

The week before surgery	10
The night before surgery	10

At the Hospital

The day of surgery	11
After surgery: In the ICU	11

After the Hospital

What to expect as you recover	14
Take care of your incisions	17
Take care of your surgical leg	18
Take your medicines	18
Pace your activities	19
Caffeine	21
Alcohol	21
For women	21
Protect your sternum as you get up from a chair	22
Protect your sternum as you get out of bed	23
Your activity timetable	24
Know when to get help and who to call	25

Before surgery: A checklist

Do you know:

- The type of surgery you are having?
Who your surgeon is?
- The number to call for questions before or after surgery: (615) 343-9195?
- Who your caregiver will be? You must have someone who can help you at all times. You may need help for as long as 2 weeks after you leave the hospital.
- Where you will go after you leave the hospital and your alternative arrangements if your first plan needs to change?
- How to shower and use your wipes the night before surgery?
- What medicines you will take the morning of surgery with a small sip of water?
- Where to park and arrive on the morning of your surgery?
(Admitting is located at the main entrance on the 1st floor of the hospital: 1211 Medical Center Drive, Nashville, TN 37232)

After your outpatient surgery appointment:

- Pick up your prescription for antibiotic ointment from your pharmacy. You will need to start using this 5 days before surgery.
- Buy antibacterial soap, a blood pressure cuff, a scale, and a thermometer.
- Begin weighing yourself every morning and writing it down in your daily log. Also begin checking your blood pressure, heart rate, and temperature 2 times a day (1 time in the morning and 1 time in the evening). Write these numbers down in your daily log.
- Make hotel arrangements if you need them. Call Vanderbilt's Guest Services at (615) 936-7666 if you need help.
- Register for an account at My Health at Vanderbilt.

The night before surgery:

- Shower, and use your wipes and nasal ointment.
- Remember not to use scented soaps, powder, or lotion.
- Do not eat or drink after midnight. If you do, you won't be able to have surgery. A sip of water with your medicines in the morning is OK.
- Put new, clean sheets on your bed before you go to sleep.

The day of surgery:

- Take any medicines you need to take with a small sip of water.
- Arrive on time at the main hospital waiting area on the first floor. Go to the check in desk.

Preoperative Instructions:

Lower your risk of infection

The night before surgery

- Read the instructions on this sheet.
- Prepare your skin, clean your skin, and use the nasal antibiotic exactly like the instructions say.

Step 1: Prepare your skin.

- Shower. Wash your hair with shampoo until it's clean. Wash your entire body with liquid or bar soap.
- Wait at least 1 hour for your skin to dry before you use the antibiotic solution and cloths to clean your skin.
- Don't use any lotions, creams, deodorant, make-up, perfume, powder, or after-shave on your body.

Step 2: Clean your skin with the antibiotic cloths.

- One hour after your shower, open the outer plastic wrap of the cloths that you were given. You'll use all 6 cloths.
- Rub the cloths on your skin. Use firm pressure as you wipe.

Cloth 1: Wipe your neck, chest, and belly (down to your belly button).

Cloth 2: Wipe your lower belly and groin (below your belly button to upper thighs). Rub the cloth between any folds of skin on your belly and where your legs attach to your body.

Cloth 3: Wipe your right arm and underarm.

Cloth 4: Wipe your left arm and underarm.

Cloth 5: Wipe your right leg.

Cloth 6: Wipe your left leg.

- After using the 6 cloths, let your skin air dry for 1 minute before you put your clothes on.

- Don't rinse your skin. You may feel sticky, but this will go away.

5 days before surgery, start using your nasal antibiotic.

You will use this antibiotic 2 times a day, in the morning and at night, for 5 full days, and then on the morning of surgery.

1. Take the tube of Bactroban ointment; remove the lid from the tube.
2. Use a cotton swab to put a pea-size amount of ointment into both nostrils.
3. Gently pinch your nose, and massage the ointment throughout your nostrils.
4. Put the lid back on the tube, and wash your hands.

Before you leave the hospital: A checklist

Do you have:

- A copy of *Your Guide to Heart Surgery*?
- Your incentive spirometer?
- Your discharge instructions?
- The date of your follow-up appointments?
- Your lab prescription—if you need to have any lab work done?
- The phone number to call if you have any questions? Remember: (615) 343-9195

Do you know:

- How to care for your incision?
- What medicines to take, how to take them, and what they are for, including your new medicines?
- How often to take your pain medicine?
- What medicines you have already been given in the hospital today?
- If and when you need to have more blood taken for tests?

Do you understand:

- Your activity, lifting, and driving restrictions and how long they will last?
- The kind of heart-healthy diet you need to follow, including sodium and fluid guidelines?
- What signs and changes you need to tell your doctor about if they happen to you?
- Any special precautions you need to take now and in the future, in relation to your heart condition or your medicines?

After the hospital: A checklist

The day you leave the hospital, you or your caregiver should:

- Pick up all your medicines from your pharmacy. If you are unable to pick up all your medicines the day you leave the hospital: tell us before you leave, or call us at (615) 343-9195. You can also use the *Meds to Beds* program.
- Get your prescription for pain pills (narcotics) filled in Tennessee. This prescription will be printed on paper.
- Buy a scale, blood pressure cuff, and thermometer if you don't already have one.
- Sort your medicines in your pillbox, or chart your medicine schedule.

Starting on the day after you leave the hospital, you need to:

- Weigh yourself first thing in the morning every day after you have emptied your bladder.
- Check your blood pressure, heart rate, and temperature 2 times a day—in the morning and in the evening. Write the numbers in your log.
- Clean your incision with mild soap and water every day.
- Go for a walk every day, 3 to 4 times a day, starting at 5 minutes each time.
- Do your breathing exercises and spirometer 10 times every hour every day for 2 weeks.
- If you're ordered to get your blood drawn, call your doctor's office or the hospital to schedule that appointment.
- Review the list of signs and symptoms on the caution stoplight print out, so you know what signs to report to the doctor. If you are having any, call us at (615) 343-9195.

Two days after leaving:

- If you have not been called about a home health visit and are supposed to have one, call us at (615) 343-9195.

One week after leaving:

- If you do not yet have a follow-up appointment scheduled, call us at (615) 343-9195.
- If you have not heard from outpatient cardiac rehab, call them to set up an evaluation appointment.

Follow-up appointment:

- Bring your most recent list of medicines and your blood pressure, heart rate, and weight log with you to the appointment.
- Let us know if you need any refills on your medicines.

After your follow-up appointment with Vanderbilt Cardiac Surgery:

- Call your local cardiologist to make an appointment for 4 weeks later. If you do not have a cardiologist, call Vanderbilt Heart at (615) 322-2318 to get one.

If you have any questions, call us at (615) 343-9195.

Before Surgery

If your doctor decides you need heart surgery, you'll have some things to do. Some steps will help your surgery go smoothly. Some will help you after you leave the hospital. Others will simply help you feel more at ease.

The week before surgery

List of your medicines

Give your doctor a list of every medicine you take. This includes all supplements and over-the-counter products. Your doctor may have you stop taking some of them or start taking others before surgery.

Stop smoking

If you have not already stopped smoking, quit right away. You will do better during and after surgery.

Arrange for a caregiver

Arrange to have an adult family member or friend to drive you from the hospital. Have a helper available for 2 weeks after your surgery.

Get meals ready for after surgery

Prepare and freeze food, or arrange to have food brought to you while you recover.

Get your home ready

Make adjustments around your home to simplify movements, such as reducing the need to climb stairs.

The night before surgery

Clean your skin, and use your nasal antibiotic

Help us lower your risk of infection after surgery. The night before surgery, you will:

- shower and prepare your skin
- clean your skin with the antibiotic cloths you've been given
- use the nasal antibiotic we've prescribed

Food and drink

No food or drink after midnight, the night before surgery! However, in the morning it is OK to drink a sip of water if you have medicines you need to take.

The day of surgery

- Bring this book with you.
- Get here on time.
- Check in at the surgery desk.
- Give us the name and contact information for a friend or family member who will be able to get updates from the surgery team while you are in surgery.

Before you go into surgery

- A nurse will talk to you about your surgery one more time and make sure you understand what will happen.
- This is your chance to ask any last questions you or your family might have about your surgery or hospital stay.

After surgery: In the ICU

After surgery, you'll be moved to the ICU (intensive care unit). Here, we will watch you closely. You may have a support person stay with you there.

How will I feel?

When you first wake up, you may feel:

- very sleepy, thirsty, or cold
- sick to your stomach
- confused.

These feelings are very common after heart surgery.

Will I be connected to a lot of machines?

When you wake up, you will likely be connected to a lot of tubes and wires and have a lot of machines around you. Don't be frightened. These will help you recover.

A breathing tube (ET tube)

This will help you breathe. One end goes down your throat; the other is connected to a machine that pushes oxygen into your lungs. The tube will be taken out as soon as you can breathe on your own, and it's safe for us to remove it. You won't be able to talk when you have the tube in.

IV lines

You'll have IV lines in your arm and hand. Through these lines, you get fluids and pain medicine.

You may also have an IV in your neck. This line is also used to give you fluids and medicines and to measure the pressures in your heart.

Arterial line (art line)

This is a tube that's usually in your wrist. We use it to check your blood pressure and to take regular blood samples.

Pacemaker

You may have a temporary pacemaker to help your heart beat regularly. In most cases, the pacemaker is only needed for a few days as you recover.

Drains (chest tubes)

These drains are placed in your chest to remove air and fluid.

Catheter

This is a tube that drains urine from your bladder until you are able to walk and go to the bathroom on your own.

Stomach tube (OG or NG tube)

This helps prevent bloating and vomiting. It is usually removed when the breathing tube is taken out.

Other wires

You will have other wires and tubes that connect you to machines and keep track of your vital signs, including your heartbeat, your temperature, and your blood oxygen levels.

Wrist wraps

Your wrists may be wrapped down so you don't pull out any tubes or wires by accident. They will be removed when you are awake and able to cooperate.

What should my family expect if they come to the ICU?

If your family comes to see you in the ICU, they can expect that:

- you may have a lot of tubes and wires connected to your body, including a breathing tube.
- you may look pale
- your face and body may be swollen.

They should not be worried; all of this is normal.

What else will happen in the ICU?

We will watch you closely. A nurse will always be there for you.

Possible sleeping problems

- The ICU is a busy place. The lights are always on and it can be noisy.
- We might wake you up in the middle of the night for blood tests and X-rays your provider has ordered.
- We may check your blood sugar every hour or so, even if you don't have diabetes. This is to lower the risk of any complications.

Pain after surgery

- Remember that some pain is normal after surgery even with medicine. Your nurse will talk with you about setting pain goals.
- Even with medicines, your pain may not improve as much as we would like. Tell a nurse right away if your pain does not get better.
- Do not wait until your pain gets bad to tell us about it.

Changes to your drains, tubes, wires, and monitors

As you recover, we'll take out many of your drains, tubes, wires, and monitoring devices.

- Your breathing tube will be taken out when you can breathe on your own.
- When your breathing tube is taken out, you'll likely get oxygen through a mask or small prongs in your nose.
- Other drains, tubes, wires, and monitoring devices will be removed when you no longer need them.

You may begin doing exercises for your lungs

Once your breathing tube is out, you may begin exercising your lungs even while you are in the ICU.

A therapist or a nurse will teach you deep breathing and coughing exercises. Do these exercises as you are told, even if you have some chest pain. Remember that some chest pain is normal after surgery.

- We will give you a pillow and show you how to use it when you do your coughing exercises.
- If you still have bad chest pain when you do your coughing exercises, tell your nurse.

You'll also use your incentive spirometer to exercise your lungs.

You'll start moving around

Once the breathing tube is out and your vital signs are stable, a nurse or physical therapist will help you start moving around. This will happen early in your recovery, and likely while you are still in the ICU.

You may start by just sitting on the edge of the bed or moving from the bed into a chair. A staff member will help you get up and walk. You need to walk, even if you feel like you can't. At first, you'll get tired easily. Tell the nurse if you feel dizzy or can't breathe.

After the Hospital

What to expect as you recover

Your appetite may be low

After surgery, you may not feel like eating. It may take several weeks for your appetite to come back. Many patients notice that their sense of taste is less or almost gone. Some patients even complain of feeling sick to their stomach at the smell of food for 1 or 2 weeks after surgery.

Remember that you need to eat even if you don't feel like it. Good nutrition is necessary for you to heal.



You may feel tired

Feeling tired after surgery is normal. Don't let it get you down. Your recovery time will let your body heal. Over time, your strength and ability to do more things will get better. It is helpful to get up at a normal time every day, weigh yourself each morning, dress in regular clothes, and eat your meals at the table. For comfort, wear loose clothes that do not put pressure on your incisions. Most importantly, rest when you are tired.

You may have swelling

You will likely have some swelling, especially if you have an incision in your leg. Both of your legs may swell. Raising your legs and taking your medicine as prescribed will help.

You might feel sad

You might have mood swings and feel depressed. You may have good days and bad days. Don't let it get you down. It will get better.

You might have muscle pain or tightness

You may have muscle pain or tightness in your shoulders and upper back between your shoulder blades. It, too, will get better with time. Your pain medicine will help with this.

You may have loss of sensation or numbness

If the mammary artery in your chest was used for a bypass during your surgery, you may have numbness to the left of your incision.

You may have pain

It's normal to have some muscle or incision pain, itching, tightness, and numbness along your incision. If you had bypass surgery and have incisions in your legs, getting up, walking, and time will help to take away leg discomfort and stiffness.

We'll give you a prescription for pain medicine to take if you need it. It's important that you're comfortable enough to cough effectively, breathe deeply, and do your daily walking and exercise. Use your incentive spirometer to strengthen your ability to breathe.

Side effects of prescription medicines include feeling sick to your stomach, not being hungry, not being able to use the bathroom, and feeling "dragged down" or drugged.

To help you feel more normal, you may alternate extra-strength acetaminophen (Tylenol) with your other pain medicine. For example, take the acetaminophen at 10 a.m., the prescription pain medicine at 2 p.m. and then the acetaminophen again at 6 p.m.

Tips to remember:

- Oral medicines take about 20 to 30 minutes to start working.
- Don't wait until your pain gets bad to take something for it. It is easier to stop pain before it gets bad.
- Avoid stomach upset by taking your pain medicine with a small amount of food or milk.



Clicking in your chest (sternum)

You may notice a clicking noise or feeling in your chest in the first days after surgery. It should go away within the first couple of weeks. If it gets worse, call your surgeon.

Call your doctor if:

- your sternum feels like it moves, or it pops or cracks when you move
- you have angina or chest pain that is different than it has been or is really bad
- you have shortness of breath
- you have a really bad headache.

You may have trouble sleeping

Try these tips if you have trouble sleeping.

- Take your pain medicine about half an hour before bedtime.
- Arrange your pillows so you are comfortable.
- Rest during the day, but not so much you can't sleep at night.
- If you feel nervous or anxious, talk to someone.
- In the evenings, avoid chocolate, coffee, tea, colas, and anything with caffeine.
- Listen to relaxing music.
- Get into a bedtime routine. Let your body know when it is time to relax and get some sleep.

If these tips don't help, don't lose hope. Your normal sleep patterns will return within a few months.



You may be constipated

People often have constipation after surgery. This is because of lack of fiber in the diet, not enough fluids, lack of exercise, and pain medicine.

Fiber

To get more fiber, eat fruits, vegetables, and whole grains.

Fluids

Fluids (water, juice) make bowel movements softer and easier to pass. If you have problems with constipation and your doctor says it is OK, drink about eight 8-ounce glasses of fluids each day. Alcohol and drinks with caffeine have the opposite effect and can help cause constipation.

As you recover, we recommend that you drink no more than 64 ounces (2 liters) of fluid each day.

Exercise

Exercise is known to help constipation. Walk and move around as much as you can while still being safe.

Medicines

If you use medicine to help your constipation, first try a stool softener. If that doesn't work, you may also use a laxative (Miralax) that you can buy at the store.

Take care of your incisions

Don't worry if you have a lump at the top of your incision. It will disappear in time.

Washing your incisions

- It's OK to take warm showers, just not too hot or too cold. Very hot water can cause you to feel faint.
- Wash your incisions gently with antibacterial soap and water. But don't rub them.
- When you are in the shower, make sure your incisions are not continually sprayed with water. Try standing with your back to the shower head.
- Pat your incisions dry.
- Don't put any lotion, cream, oil, or powder on your incisions unless your surgeon told you to.

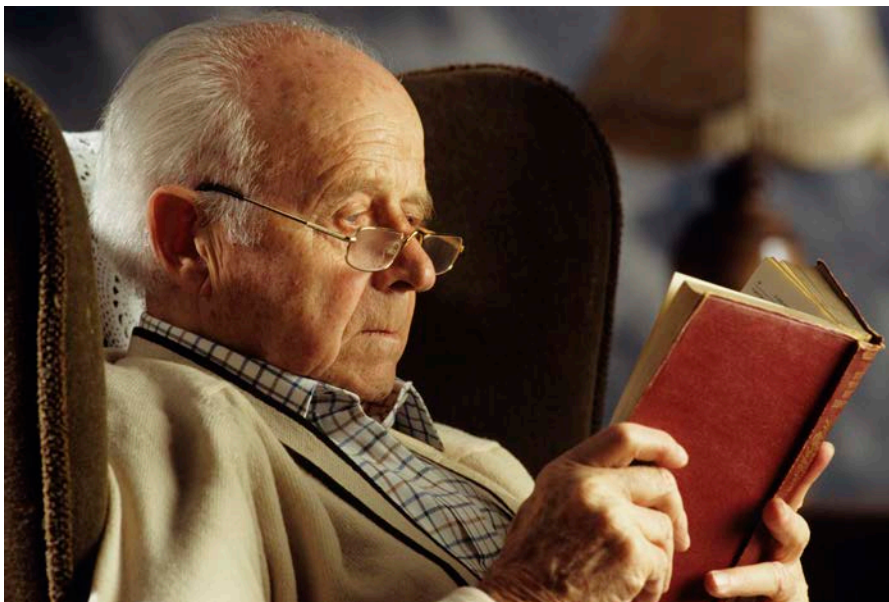
As your incisions heal

- Wear loose clothes that do not put pressure on your incision.
- Avoid tub baths, Jacuzzi spas, or swimming until your doctor says it's OK.
- Avoid too much sunlight for the first year.

Call your doctor if your incision:

- gets more red
- swells
- feels warm or begins to hurt
- begins to drain
- separates at the edges.

Also call your doctor if you have a temperature of more than 101.5°F (38.6°C).



Take care of your surgical leg

If your surgeon took a vein from your leg during your surgery:

- avoid crossing your legs since it lowers circulation
- raise your leg on a stool or table when you sit
- check your leg every day for swelling. The swelling should go down when you raise your leg. If your leg keeps swelling, or if it gets worse, call your surgeon.

Take your medicines

Taking your medicines the way your doctor has told you is an important part of getting better. When you leave the hospital, your care team will give you a letter that explains the medicines to take at home and a list of prescriptions to be filled by your local drug store.

- Your doctor will tell you how long you will need to take medicines.
- Make sure you understand the name of each medicine, what it's for, and what time to take it.
- Take only the medicines that are prescribed for you.
- Don't take any other medicines without telling your surgeon or primary care doctor. This includes medicines that you can buy without a prescription.
- Carry a list of all your medicines and dosages with you at all times.

Pace your activities

Light housework, or other light activities, may help you recover faster. In general, you can do anything that you can do comfortably. Most people can do things according to the activity timetable in this book. But everyone is different. Your doctor will need to approve of you moving from one stage to the next. Pace yourself. Spread your activities through the day. Rest when you need to.

Walking

Walking is one of the best ways to exercise. It increases circulation throughout the body and to the heart. Keep these things in mind as you add walking to your routine:

- Don't try to do too much at once.
- Walk on flat, level ground.
- Stop and rest if you get tired.
- Slowly increase the distance and time that you walk.
- Go at your own pace.

Climbing stairs

You can climb stairs, unless your doctor says not to.

- Take the stairs at a slow pace, and stop and rest if you get tired.
- Hold on to the handrail, but never pull yourself up with your arms. Use your legs.

Do not climb up and down stairs several times during the day, especially the first few days at home.



Lifting and pulling

- For the first 6 weeks, do not lift things that weigh more than 10 pounds.
- Do not push or pull heavy things.
- Do not carry children, groceries, or pets.
- Do not mow the grass, vacuum, or move furniture.

Remember: Do not hold your breath when straining yourself, especially when lifting or when having a bowel movement.

Driving

For 6 weeks, do not drive a car or any other vehicle. You may be a passenger as often as you like. When traveling, be sure to get out of the car about every 2 hours to walk around for a few minutes. Your surgeon will tell you when it is safe for you to drive.

If your chest was cut down the middle during your surgery, it is best for you to sit in the back seat while your chest heals. This way your chest will not be hit by an airbag if the airbags deploy for any reason.

Visitors

For the first week or so, it may be tiring for you to have many visitors. You may not feel like being social. Use your own judgment in limiting visits by friends and family. If you get tired, excuse yourself and lie down. Your visitors will understand.

During the first few weeks after surgery you may also be more likely to get an infection. It is best to stay away from people who have colds or other illnesses.

Traveling

If you plan to travel home by plane or train after your surgery, you need to get your doctor's approval first. If you travel a long distance by car, stop every few hours to stretch your legs. Once you feel better, talk with your doctor before you visit high altitudes, like places in the mountains.



Resting

You need a balance of rest and exercise as you recover. Plan to rest between active periods and take short naps when you need to. Resting also includes sitting quietly for 20 to 30 minutes. If you plan to exercise after a meal, always rest for at least 30 minutes first.

Returning to work

You will need to take time to recover. Most patients are able to return to light work 6 to 12 weeks after leaving the hospital. The timing depends on the type of work you do, the type of heart attack or surgery you had, and how quickly you are recovering. Your doctor will talk with you about when you might return and also give you a written excuse if you need one.

Sexual activity

Many patients and their partners feel nervous about having sex after heart surgery. The amount of energy needed for sex is similar to climbing 1 or 2 flights of stairs or walking about half a mile at a fast pace. If you cannot do these things without becoming tired or short of breath, allow more recovery time before having sex.

For the first 6 to 8 weeks:

- Use positions that limit pressure or weight on your sternum as well as tension on your arms and chest.
- Positions where you are on the bottom or are lying side by side with your partner are generally more comfortable while your sternum is healing.
- If you are tired and tense, wait until you are rested and relaxed.
- Avoid sex for 3 hours after eating.

Soon you and your partner will be able to return to a satisfying emotional and physical relationship. Discuss any problems with your surgeon or nurse.

Caffeine

Coffee and tea contain caffeine, which may make you feel nervous or cause your heart to beat faster. If you have either of these feelings, switch to decaffeinated coffee or tea.

Alcohol

For most people, having an alcoholic drink every once in a while is OK. Do not drink a lot of alcohol because it may interact with certain types of medicines. Check with your doctor or pharmacist. Do not drink alcohol if you are taking pain medicine.

For women

- It's normal to have a delay or other changes in your menstrual period after the stress of hospitalization.
- Check with your doctor about the birth control method that is best for you.
- Patients may want to wear a loose fitting sports type bra with no underwire after surgery. It can provide support and ease some of the stress or pulling on the incision, especially for those with larger breasts. You may bring one from home. Or you may order a surgical bra while you are the hospital.



Protect your sternum as you get up from a chair

1. Lean back and forth to move yourself toward the front edge of the chair.
2. Make sure your feet are flat on the floor and directly under your knees.
3. Breathe. Lean forward toward your knees.
4. Push down with your legs to stand up.
5. **Don't** pull yourself to the edge of the chair using your arms.
6. **Don't** use your arms to push yourself up from the chair.

YES!



NO!



Protect your sternum as you get out of bed

1. Swing your legs over the side of the bed.
2. Roll onto your shoulder.
3. Using your elbow, push yourself up to steady yourself. Make sure to keep your arms close to your body.
4. **Don't** push with your hands to bring yourself to the side of the bed.

YES!



NO!



Your activity timetable

Weeks 1 to 6	Weeks 6 to 12	After 3 Months
Attend movies	<i>(Continue activities from weeks 1 to 6, and add these activities if they are things you normally do.)</i>	<i>(Continue activities from weeks 1 to 12, and add these activities if they are things you normally do.)</i>
Cook meals		
Climb stairs	Return to work part-time if your job does not require lifting and your surgeon has said it is okay	Heavier housekeeping chores, like scrubbing floors, washing windows
Dine at a restaurant	Housekeeping like doing laundry, sweeping, ironing	Heavy gardening like digging and shoveling
Light housekeeping like folding clothes, setting the table, washing dishes, dusting	Heavier gardening, like raking leaves	Play football, soccer, softball, baseball, tennis, golf, bowling
Light gardening like potting plants and trimming flowers	Walk dog on leash	Hunt
Needlepoint, knit	Fish	Jog
Play cards and games	Take business or pleasure trips	Bicycle
Read	Light aerobic exercise (no weight lifting)	Lift weights
Ride in, not drive, a car	Go boating	Ride a motorcycle
Ride a stationary bike	Drive a car or small truck	Do push-ups
Shampoo your hair		Water ski
Shop		Sky dive
Walking (outside or on a treadmill)		
Do NOT drive.		
Do NOT lift more than 10 pounds.		

Know when to get help and who to call

Immediately call 911, or go to the local ER if you have:

- chest pain like before your surgery
- heart rate faster than 150 beats a minute, with shortness of breath or new irregular heart rate
- shortness of breath not relieved by rest
- blood coming from your lungs when you cough
- sudden numbness or weakness in arms or legs
- sudden, severe headache
- fainting spells
- severe abdominal pain
- really bad stomach feelings, throwing up, or diarrhea
- bright red stool.

Call your Vanderbilt doctor right away if:

- you have sudden weight gain (3 or more pounds in 24 hours)
- your ankle swells more, or leg hurts more
- you have a fever of 101.5°F (38.6°C) or more
- your incisions bleed, drain, or ooze; get red, become warm to touch; or start to swell
- you get a skin rash
- you get really tired
- you have pain in your calf that gets worse when you point your toe up to your head
- you have to pee a lot, have burning or urgency when you pee, or have blood in your pee
- your blood pressure top number is less than 90 or more than 145
- a heart rate that is between 120 and 150 beats a minute.

VanderbiltHeart.com

(615) 322-2318



VANDERBILT HEART