

Coronary Artery Bypass Grafting (CABG) *Preparing for the surgery*

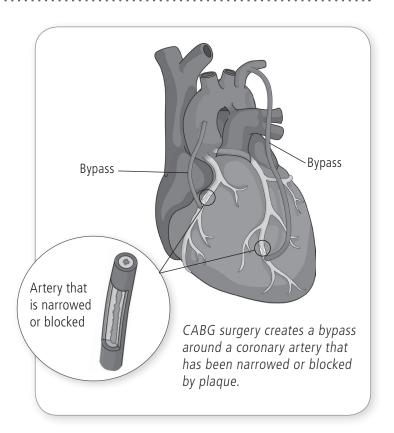
What is this surgery — and why do I need it?

Your **coronary arteries** are the blood vessels that carry oxygen-rich blood to your heart. In **coronary artery disease**, a fatty substance called **plaque** builds up in the arteries. This plaque buildup irritates and scars the arteries, and over time they become narrowed or blocked.

CABG surgery is a treatment for coronary artery disease. In this surgery, a blood vessel from your leg, chest, or arm is used to create an alternate route (a **bypass**) around a blocked section of coronary artery. Because a surgeon can perform several bypasses in a single surgery, CABG is a good option if several coronary arteries are narrowed or blocked. It's also good for people whose arteries have re-narrowed after a cath lab procedure in the past.

How do I prepare for the surgery?

- Meetings with members of your healthcare team. You'll meet your surgeon and anesthesiologist before surgery, along with other members of the surgery team, such as a physician assistant. They will go over the surgery plan and answer your questions. A member of your hospital care team will explain hospital routines to you and your family and answer your questions. You'll also receive an advance healthcare directive form, if you haven't already completed one. This form lists your healthcare wishes in case you can't take part in medical decisions at some point.
- **Preliminary tests.** You'll have tests for your lung function, and you may also have a chest x-ray, blood tests, and urine tests. These tests help the team assess how your body will respond to surgery.



- Medication. Your healthcare providers will probably tell you to stop using Coumadin or other blood-thinning medication before surgery. They may prescribe an antibiotic to take before surgery, along with a beta blocker if you're not already taking one. You'll also be told whether to continue other medications you take regularly. Tell your healthcare providers about ALL meds you take, including over-the-counter remedies and supplements.
- **Clean skin.** You may be given a special soap to use on the day before surgery.
- **Fasting**. You'll probably be told not to eat or drink anything after midnight the night before your surgery. Fasting helps to prevent surgery complications.

What happens on the day of surgery?

- You'll fill out paperwork, including an informed consent form. This form shows you understand the risks and benefits of surgery (see below), and gives your healthcare team permission to treat you.
- You'll be connected to a heart monitor, and a nurse will place an IV (intravenous) line in your wrist or arm to give you medication.
- An arterial line (thin tube) will be inserted into an artery, usually in your arm, to help monitor you during surgery.
- Your family will wait in a waiting room. While you're in surgery, a member of the operating room staff may call them with updates.

What happens during the surgery?

CABG surgery usually takes at least 4 hours. Here's what happens:

• **Preventing pain**. You'll have **general anesthesia**. This is medication so that you sleep through the surgery, feel nothing, and don't remember it afterward.

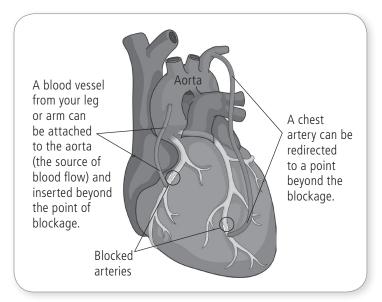
- **Inserting tubes**. Healthcare providers will place several tubes:
 - A breathing tube, a tube inserted into your throat and connected to a machine that will breathe for you
 - A Foley catheter, a tube to empty your bladder
 - An NG tube, a tube that goes from your nose to your stomach, used to empty your stomach
 - One or more chest tubes, inserted to drain excess blood or other fluids after the surgery
 - A Swan-Ganz catheter, a tube inserted into your neck, used to measure the blood pressure in your heart and in the blood vessels to your lungs
- Getting a blood vessel to use for the bypass. If a blood vessel from your leg or forearm will be used, a member of the surgery team will remove it. Most often, this involves two very small incisions (cuts), but sometimes it requires a single larger incision. Your body won't miss this vein or artery other blood vessels will take over the blood flow in the area.

Talking with your doctor before CABG surgery

The table below lists the most common potential benefits, risks, and alternatives for CABG surgery to bypass one or more blocked coronary arteries. There may be other benefits or risks in your unique medical situation. Talking with your doctor is the most important part of learning about these risks and benefits. If you have questions, be sure to ask.

Potential benefits	Risks and potential complications	Alternatives
The main benefit from CABG surgery is restored blood flow to areas of the heart. When the heart has more blood and oxygen, the result can be: Relief from angina (chest discomfort) More energy Less risk of a heart attack later on	 Risks and potential complications are listed below: Problems that can happen with any surgery. These include surgical site pain, infection, bleeding that requires a blood transfusion, blood clots, or reactions to general anesthesia (including vomiting, trouble urinating, sore throat, cut lips, headache, heart problems, stroke, or pneumonia). Heart attack during or after the surgery. Memory or thinking problems after the surgery. Low-grade fever and chest pain that can last up to 6 months after the surgery. Blockage of the grafts later on, so you need another surgery. Heart rhythm problems. Kidney or lung failure. Stroke. Death (extremely rare). 	 Alternatives to CABG include: Angioplasty, a nonsurgical procedure. In an angioplasty, a catheter (a narrow plastic tube) is placed into an artery near your groin. It is then threaded to the blocked coronary artery. A balloon at the end of the catheter is used to stretch the artery open, and a stent (a narrow wire tube) may be left behind to hold the artery open. Watching and waiting, with medication, lifestyle changes, and regular tests to check the blood flow to your heart.

- **Reaching the heart.** The surgeon will make an incision (cut) to reach the heart in one of two ways:
 - In traditional surgery, the incision is down the middle of your chest. The surgeon then separates your sternum (breastbone).
 - In minimally invasive surgery, the incision is smaller and is in the left side of your chest, between your ribs.
- Keeping your blood circulating. Your heart will most likely be stopped during the surgery. You will be connected to a heart-lung bypass machine, which takes over the work of your heart and lungs. In some cases, the surgery can be done without using the bypass machine your heart will be slowed down but it will keep pumping during the surgery.
- Creating one or more bypasses. For each bypass, the surgeon will connect a section of blood vessel to the aorta (a large artery coming from your heart) and to a point beyond the blockage in the coronary artery. Or, if the surgeon uses the internal mammary artery (a large artery in your chest), it will be redirected and attached to a point beyond the blockage.



• Finishing the surgery. If you had traditional CABG surgery (that separated your breastbone), the surgeon will close up the breastbone with stainless steel wires. Then, for either type of CABG surgery, the surgeon will close your incisions with stitches.

What happens after the surgery?

You will be in the hospital 3 to 7 days after the surgery. Here's what to expect:

- Right after surgery, you will be taken to the intensive care unit (ICU). Your family members will be taken to the ICU waiting room, where your surgeon will talk to them about how the surgery went. The ICU staff will monitor you closely. When you are stable, your family can visit you.
- You may be swollen from fluids given during surgery. Your family should be prepared to expect this it is normal after surgery.
- You will have a breathing tube. It will be taken out as soon you can breathe safely on your own.
- You will be connected to a heart monitor and other tubes. See page 2 for a description of the tubes inserted during surgery these will still be in place after surgery. As you recover and improve, the monitors and tubes will be removed one by one.
- You'll move from the ICU to a regular hospital room as soon as your doctor feels your condition is stable and improving.
- You may have medication through your IV to control your blood glucose (blood sugar). The nurse will regularly check your blood glucose and may give you insulin, even if you do not have diabetes. Why? Blood glucose levels naturally rise when the body is under stress. Because a high blood glucose level can slow healing, you may be given insulin to stabilize it.
- Healthcare providers will manage your pain. Healthcare providers will regularly ask you to rate your pain level. You might have pain medication through an IV at first, and then you will switch to pain pills. Ask for the Intermountain handout Managing Your Pain after a Medical Procedure to learn more.



• You'll work with a respiratory therapist. During surgery, it's normal for mucus to build up in your lungs. A respiratory therapist will visit regularly to check your lung function — and help you do exercises to improve it. You'll probably start using a device called an incentive spirometer to help you breathe deeply.

- You'll get the right nutrition. While your appetite may be less after surgery, it's important for your body to get good nutrition to promote healing. You'll be encouraged to eat, and you may receive nutritional supplements.
- You'll be expected to move and walk. You'll get out of bed and walk several times a day, and sit in a chair as much as possible. Cardiac rehab staff will guide you as you increase your activity. They will help you do stretches and gentle calisthenics, and you might use a stair-step machine you can operate while you're sitting.
- As soon as your doctor feels you are ready, you'll be discharged to finish your recovery at home.

How should I care for myself at home?

Recovery after CABG surgery takes around 4 to 8 weeks. When you are ready to go home from the

hospital, your nurse will give you a full set of instructions. You may receive Intermountain's *Heart Care Handbook* after your CABG surgery. Chapter 1 in the handbook, "Going Home," covers what you need to do during your recovery at home.



Other chapters in the *Heart Care Handbook* contain information about heart disease, heart disease risk factors, heart tests, and treatments for heart disease. The handbook also covers lifestyle changes to improve your heart health. The grafts inserted during CABG surgery are just as likely to get plaque buildup as the arteries they replaced. For this reason, it's important to make changes to reduce your risk of coronary artery disease.

Outpatient cardiac rehab is a great way to recover after surgery and improve your heart health. This program focuses on exercise, education, and support to help you build a stronger heart. Most CABG surgery patients attend outpatient cardiac rehab a few times a week for several months.

When to seek medical care

Call your healthcare provider if you have any of the following after CABG surgery:

- Signs of infection or a blood clot:
 - Temperature over 100.4° F for 3 days in a row, or any fever over 101.5°
 - Leg, arm or chest incisions that are red or hot to touch
 - Swelling or soreness around incisions that gets worse
 - Drainage that increases, changes color, or smells bad
 - Calf swelling, tenderness, warmth, or pain
- Signs of heart or lung problems:
 - Angina (chest discomfort) or a smothering feeling
 - Racing or irregular heartbeat
 - Shortness of breath (trouble breathing) that started recently or is getting worse
 - Dizziness, lightheadedness, or weakness
 - Weight gain more than 2 pounds in one day or more than 5 pounds in a week
 - Excessive swelling in the hands or feet
- Other problems:
 - Nausea, vomiting, or diarrhea that doesn't go away
 - Pain that limits your daily activities
 - Clicking or movement in your sternum (breastbone) after 6 to 8 weeks
 - Feelings of depression that don't improve or that get in the way of daily activities
 - Bleeding gums, or blood in your urine or stools

Seek emergency care if you have any of the following:

- Chest pain that's not relieved by rest or nitroglycerin
- Shortness of breath that suddenly gets worse
- Resting heart rate that is very slow (below 50 beats per minute) or very fast (over 130 beats per minute), unless your healthcare providers tell you otherwise
- Sudden numbness or weakness in your arms or legs
- Sudden, severe headache
- Fainting spells