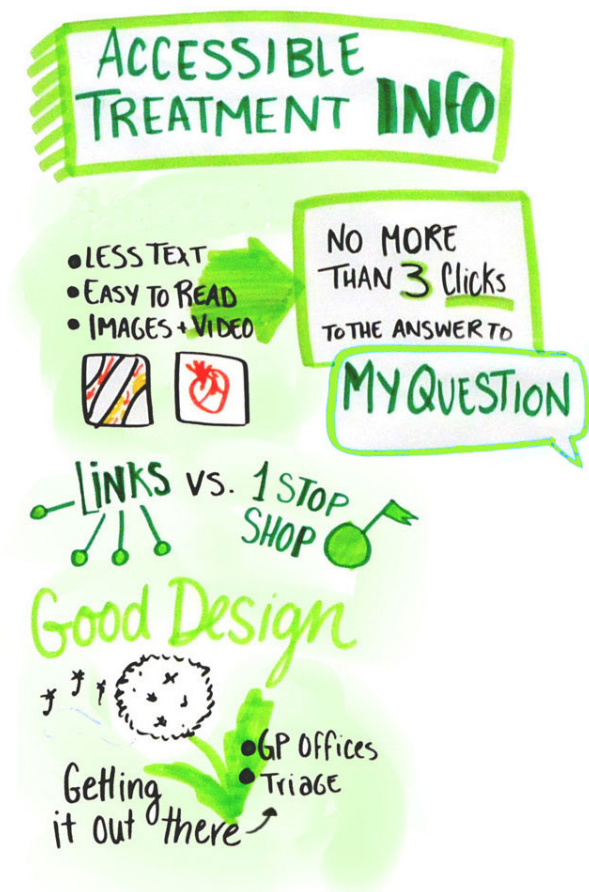


HeartHub.ca Research Guide: Understanding the Basics



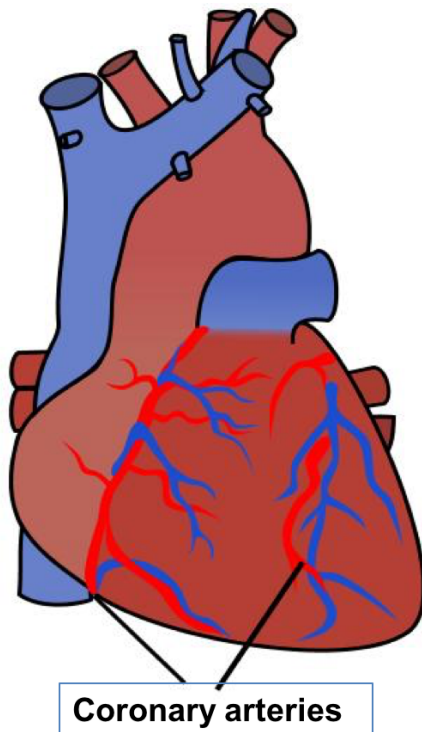
Research helps us to make the best treatment choices we can with the information we have. Research can't predict what will happen in your case. When research says most people live longer if they have a treatment, there's no way to know for sure that you will live longer if you have that treatment. But the best way to prepare to make a heart treatment decision is to *do your own research* – and we're here to help!

We've worked together with plain language experts, artists, and heart health professionals to help you understand what current research says about coronary artery disease (CAD) and diabetes.

Use the red buttons below to search through the information. There is a mix of both 'easy' read/view options that everyone can understand, and '*harder*' options that use more medical terms and language. The Patient Voices Network [glossary](#) may be helpful for reading/viewing these resources.

What is CAD? Your Heart

This picture shows what the heart looks like. Your heart is a muscle, like muscles that move your arm or leg. Your heart pumps blood to supply oxygen to your body through pipes called **arteries**.



The red pipes in the diagram are **arteries**. They are called **coronary arteries**.

Coronary arteries supply blood to the heart muscle to keep the heart alive, so it can pump blood to the rest of your body.

For more detail, see:

- Patient focused information including printable brochures from [Patient UK](#)
- Mayo clinic video: [“The Heart and Circulatory System – How They Work”](#)

What is CAD?

The Coronary Arteries

There are many different types of heart disease. One of the most common types is known as **coronary artery disease** (sometimes called CAD, ischemic heart disease, or just 'heart disease'). With CAD, your coronary arteries become

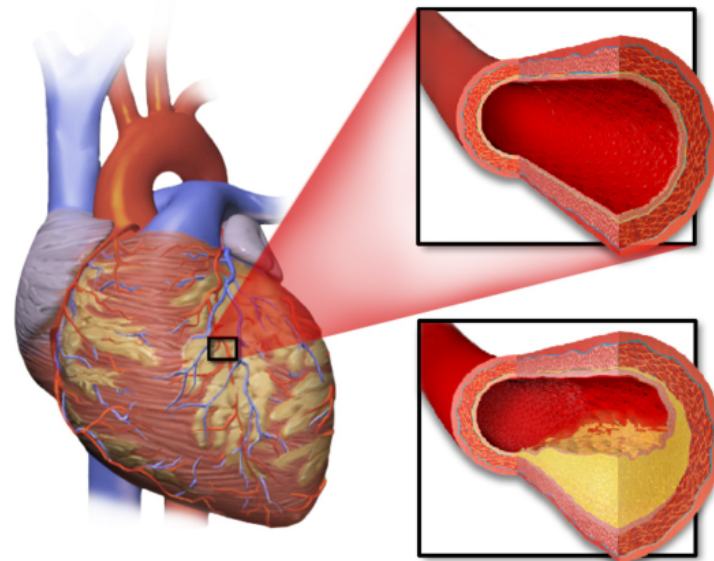


Photo by BruceBlais / CC BY-SA

Normal and Partially Blocked Blood Vessels

narrow or blocked by fatty deposits called '*plaques*'. When this happens, your heart doesn't get enough blood and oxygen. This increases your risk of having a heart attack or dying.

You may have a type of chest pain called [angina](#) because less blood gets to your heart muscle. [Women can have different symptoms from angina than men.](#)

What is CAD?

Testing for Coronary Artery Disease

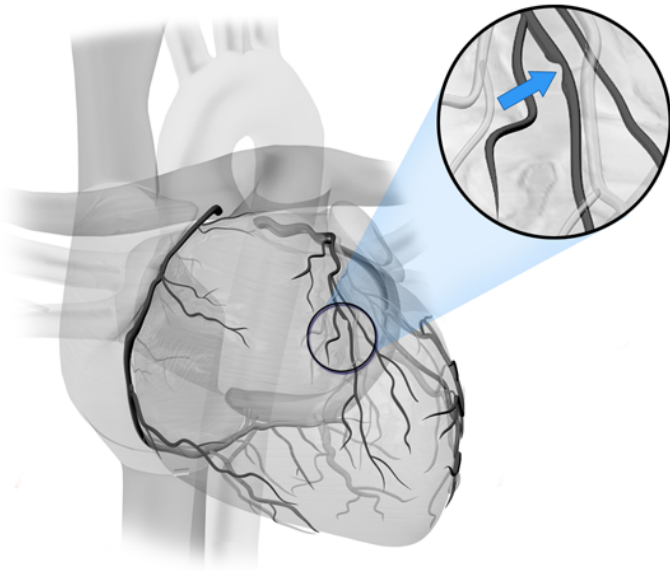


Photo by BruceBlaus / CC BY-SA / Cropped

An [angiogram](#) is one common test used to diagnose (find out) if you have coronary artery disease. Special colourless dye that shows up on x-ray is put into the arteries. Pictures are then taken using an x-ray to see if there is any narrowing or blockages in the arteries.

You will get information about angiogram tests specific to your hospital when you are given your angiogram appointment. This will include what you need to do to prepare for the test. Here are direct links to angiogram information specific to each of BC's regional health authorities:

- Vancouver Coastal Health:
 - [Vancouver General Hospital materials](#)
 - [St. Paul's Hospital materials](#) (See also St. Paul's Hospital's [Heart Centre Website](#))
- [Fraser Health](#)
- [Interior Health](#)
- [Island Health](#)
- [Northern Health](#)

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After the test, the doctor will tell you:

- if you have coronary artery disease, and
- [what can be done about it](#)

Still not sure about having an angiogram? Check out [“Should I Have An Angiogram?”](#) from HealthLink BC.

IMPORTANT: If coronary artery disease is found during your angiogram, you may need to make a decision about treatment right away with your doctor. Percutaneous coronary intervention (PCI) can be done at the same time as your angiogram.

Here is some information that might help with this decision:

- Preparing for an angiogram? [Questions you might want to ask your doctor.](#)
- I have diabetes, [what are my treatment options?](#)
- I do not have diabetes, [what are my treatment options?](#)

I Have CAD Now What?

There are 3 treatment options. Your doctor may recommend more than one treatment or no treatment at all.

Click on each of the

treatments below to learn more about them. To compare the risks and benefits of each treatment, visit our [pros & cons page](#).



1. Percutaneous Coronary Intervention (PCI)

PCI (also called 'stenting' or 'angioplasty') helps return blood flow to the heart muscle by widening coronary arteries that have become narrowed or blocked.

You will get information about PCI preparation and recovery specific to your hospital. This is often included with your angiogram appointment information. Here are direct links to information specific to each of BC's regional health authorities:

- [Providence Healthcare \(St. Paul's Heart Centre\)](#) / [Vancouver Coastal Health](#)

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- [Fraser Health](#)
 - [Interior Health](#)
 - Island Health – [before PCI](#) and [after PCI](#)
 - [Northern Health](#) – Note: PCI is not done at Northern Health hospitals.
-

More online resources:

- Information about percutaneous coronary intervention (PCI) or angioplasty from [HealthLink BC](#) (grade 7 language)
- A [video](#) describing percutaneous coronary intervention (PCI) from (Healthwise, 2.18min, easier language)
- A video describing [angiogram and PCI](#) (Sunnybrook Hospital – 6 min long)
- A [patient story](#) with description and video of PCI (British Heart Association, 5.07 min, some language medical/college level)

2. Coronary Artery Bypass Surgery (CABG)

CABG (sometimes pronounced like “cabbage”) is a surgery that attaches a new healthy blood vessel to your heart to deliver it blood when one or more of your other heart blood vessels have become narrowed or blocked.

You will get information about preparing for heart surgery and what happens after heart surgery from your regional hospital/health authority. Here are links to the available online patient information booklets:

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- [Providence Healthcare \(St. Paul's Heart Centre\)](#) – The Heart Centre also has a 22 minute [video](#) of heart surgery available in 7 languages
 - [Fraser Health](#)
 - [Vancouver General Hospital](#)
 - [Interior Health](#)
 - [Northern Health](#) – Note: heart surgery is not done at Northern Health hospitals
-

More online resources:

- Information about [coronary artery bypass surgery](#) (HealthLink BC, text, grade 7 language)
- A short [video](#) describing coronary artery bypass graft (CABG) surgery (My Health Alberta, 1.50min, easier language)
- Longer [video](#) describing CABG (RetinaBd, 4.17 min, college level language)
- [Patient story](#) with description and video of procedures for CABG (British Heart Foundation, 5.46 min)

How can I prepare for heart surgery?

- [“How can I prepare for heart surgery \(coronary artery bypass graft surgery\)”?](#) (HealthLink BC, text, grade 7 language)
- The Pacific Open Heart Association is a group of volunteers who have had heart surgery. They can speak to you and give support before or after your

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- surgery: info@pacificopenheart.org
- [Preparing for surgery](#) (American Heart Association, video, 2.11min)

Recovery after surgery

- Quick [description of recovery](#) after CABG (video, 1.40 min) relevant to BC
- [Road to recovery video](#) (American Heart Association, video, 2.15min)

3. Medications

Medications are drugs that you can take yourself to control your coronary artery disease.

- [Knowing your medications](#) (Heart and Stroke Foundation of Canada)
- [Ask a pharmacist about your medications](#) (*translation services available in 130 languages*)

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Treatment Options Will I Be Cured?



Whatever treatment you have, you may feel better, but YOU WILL NOT BE CURED.

To keep you healthy, you will need to make the lifestyle changes recommended by healthcare professionals.

You can get help to do this by attending a [cardiac rehabilitation](#) program. Your healthcare team may recommend a specific program, or you can speak to a [HealthLink BC Health Service Navigator](#) (available 24 hours in 130 languages), or use this [link](#) to find a program near you.

Planning Ahead

What Happens After Heart Treatment?

Read general information about [recovery and support when you have coronary artery disease](#) (Heart & Stroke Canada, grade 7-8 reading level)

- Includes information on relationships, emotions and feelings, support, and cardiac rehabilitation



Learn about [living well with coronary artery disease](#) (Capsana).

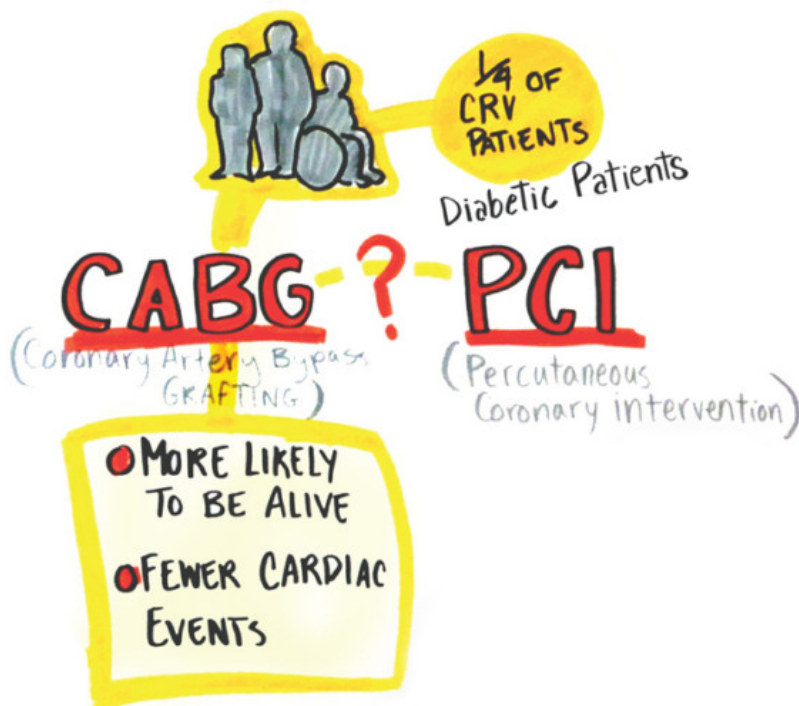
- Tells you what to expect after you have percutaneous coronary intervention (PCI) or coronary artery bypass grafting (CABG) surgery, including:
 - Going back to everyday activities, driving, work, and sexual activities (pages 4-5)
 - Some people may have feelings of depression and anxiety (page 6)

IMPORTANT: Always follow the advice of your doctor or other health professional. Your health needs may be different from the information on this page.

CAD and Diabetes

What Treatment is Recommended by Research?

You should consider having coronary artery bypass graft (CABG) surgery if you have diabetes and your doctor recommends this treatment to restore blood flow to your heart muscle.



Research has found people with diabetes who have

CABG surgery for treatment of coronary artery disease generally live longer and have fewer heart attacks than those who have percutaneous coronary intervention.

Important things to note:

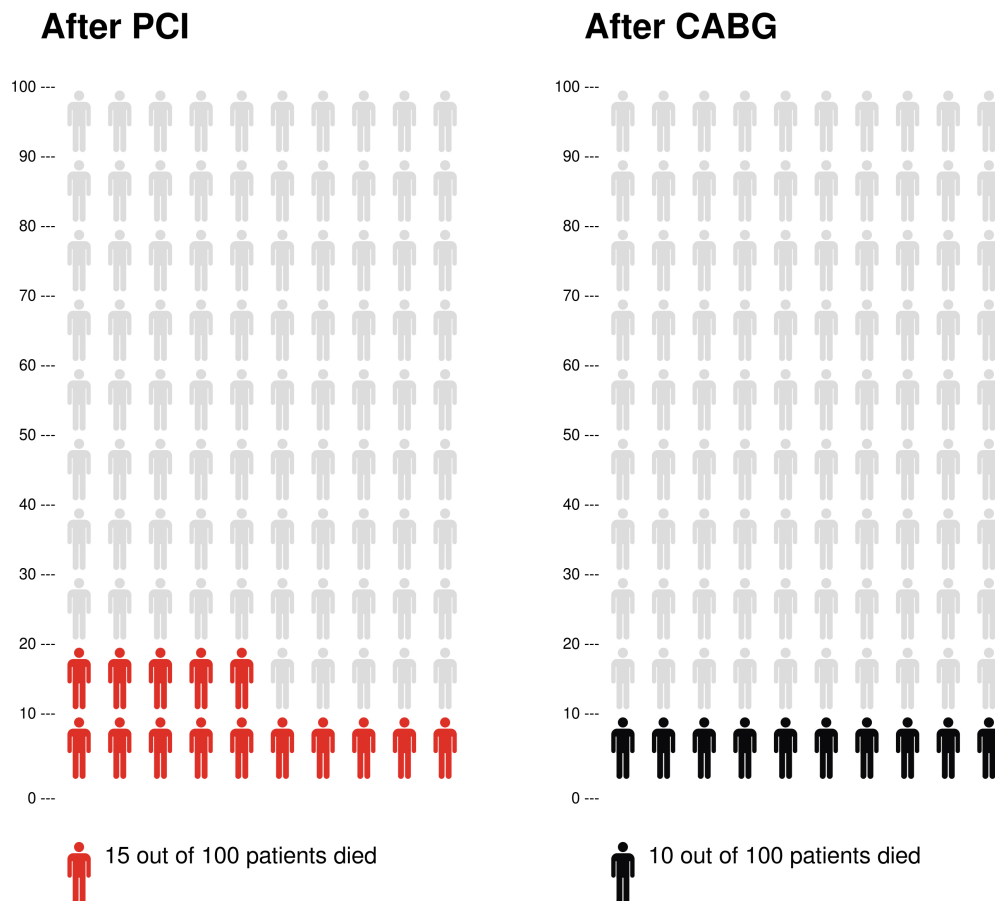
- There may be reasons why surgery may not be the right treatment for you. You should talk about treatment choices thoroughly with your doctor and family.
- What are the risks and benefits ([pros and cons](#)) of different treatments?

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Want to learn a bit more about the research? The bold text below explains some important research findings in plain language.

Heart Disease and Diabetes The Research, Explained

1) Three years after treatment, more diabetic patients are alive after coronary artery bypass grafting (CABG) surgery compared to percutaneous coronary intervention (PCI).



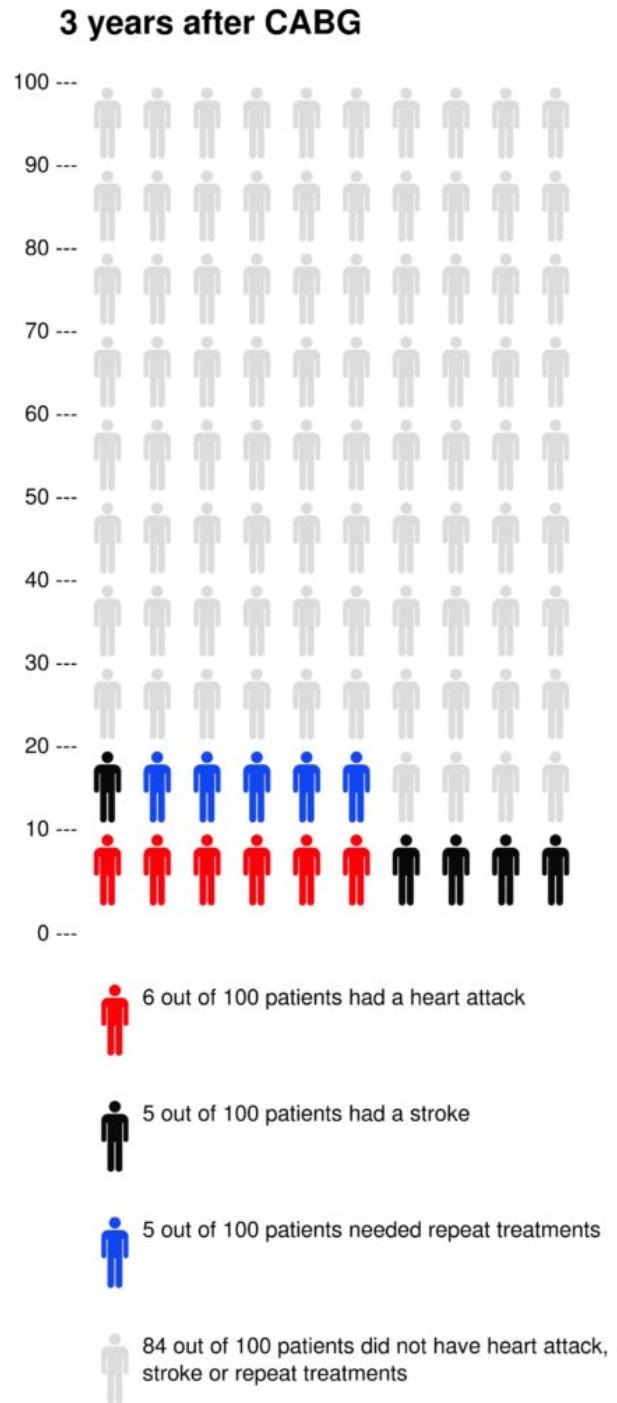
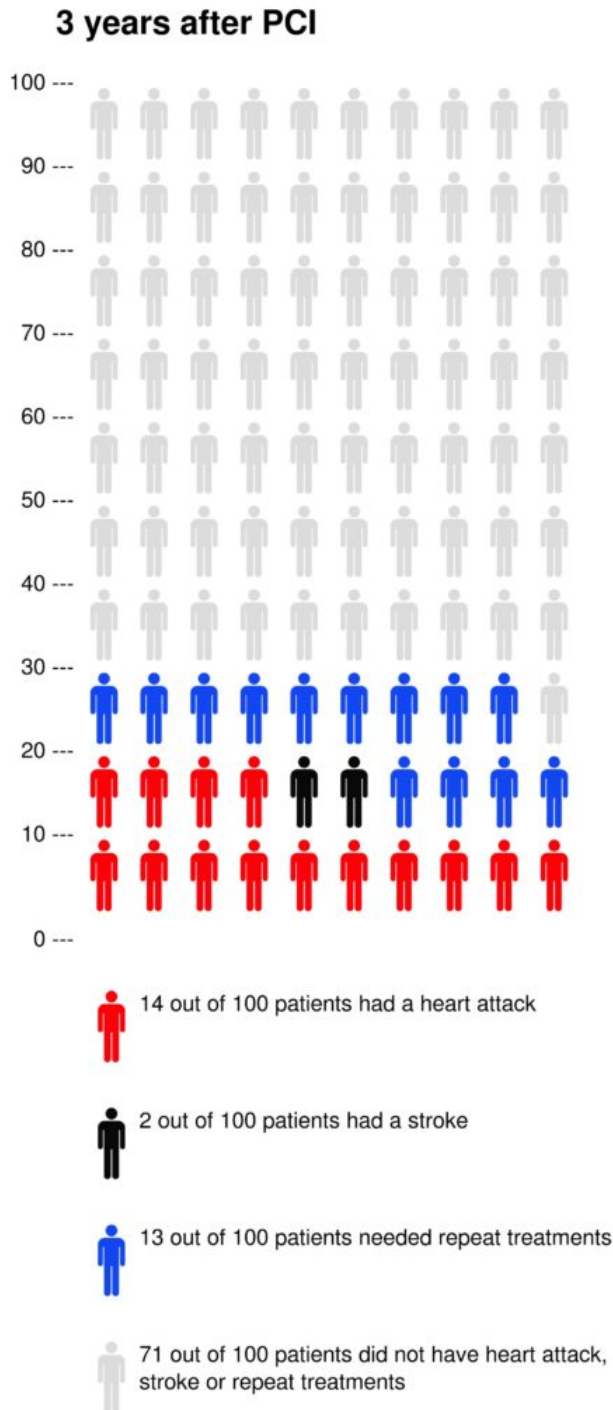
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Researchers analyzed information from 4,386 diabetic patients with stable coronary artery disease in 11 randomized studies.* An average of 3.8 years later, 15.5% of diabetic patients died after PCI compared to 10% who had CABG surgery for treatment of coronary artery disease narrowing/blocking multiple blood vessels supplying the heart.

Research article: [https://doi.org/10.1016/S0140-6736\(18\)30423-9](https://doi.org/10.1016/S0140-6736(18)30423-9)

2) Three years after treatment, less diabetic patients had a heart attack following coronary artery bypass grafting (CABG) surgery compared to percutaneous coronary intervention (PCI). More patients had a stroke after CABG compared to PCI. More patients required another coronary revascularization treatment (PCI or CABG) following PCI compared to CABG.

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More than 1900 diabetic patients from around the world were randomly* assigned to have PCI or CABG treatment. These patients had stable coronary artery disease that affected multiple vessels supplying blood to

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their heart. The researchers followed up patients a median of 3.8 years later to see the results of the treatment. Close 14% of patients had a heart attack after PCI compared to 6% after CABG. 5.2% of patients had a stroke after CABG compared to 2.4% after PCI. One year after treatment, close to 13% of patients who had PCI needed another coronary revascularization treatment, compared to 5% of patients who had CABG. This study is known as the FREEDOM (Future Revascularization Evaluation in Patients with Diabetes Mellitus: Optimal Management of Multi-vessel Disease) trial and has changed the way that doctors treat coronary artery disease in patients with diabetes in B.C.

Research article:

<http://www.nejm.org/doi/full/10.1056/NEJMoa1211585>

3) Here in B.C., three years after treatment; less diabetic patients died, had a heart attack or required more coronary revascularization treatment (PCI or CABG) after they had coronary artery bypass grafting (CABG) surgery compared to percutaneous coronary intervention (PCI). More patients had a stroke after CABG compared to PCI in the first 30 days after treatment.

This study was not a randomized study so it is considered less strong research compared to studies where patients are randomly assigned to get a type of heart treatment.* There is a chance that the sickest people had PCI because they were not healthy enough for surgery. A good thing about this study was it was closer to the 'real world' in B.C. The treatment was

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decided by the BC doctors with the patients and their families. The study included 2,947 diabetic patients who needed fast treatment for certain types of [acute coronary syndrome](#). These types of patients were not included in the other randomized studies.

Research article:

<https://www.ncbi.nlm.nih.gov/pubmed/29241487>

4) Percutaneous coronary intervention (PCI) or angioplasty is an important treatment for:

- **Certain types of coronary artery disease:** Your blood vessels can be affected by coronary artery disease in different ways and the anatomy of each heart is unique. The results of your angiogram will help to determine if PCI is the better choice for treatment.
- **Times when blood flow to the heart muscle needs to be restored right away:** Like when you are having a heart attack.
- **Patients who are more likely to have a stroke:** There is a bigger chance that that you could have a stroke following CABG, particularly in the first 30 days of recovery after surgery.
- **Elderly patients and patients with other health conditions that would make surgery a riskier treatment option.** There is a shorter recovery time and less risk of some problems, like infection and bleeding, with PCI.

Research article:

[https://doi.org/10.1016/S0140-6736\(18\)30424-0](https://doi.org/10.1016/S0140-6736(18)30424-0)

How is coronary artery disease different in diabetes?

If you have diabetes, you are more likely to develop coronary artery disease, and more of the blood vessels supplying your heart may become narrow or blocked. This increases your risk of having a heart attack or dying.

Treatments for coronary artery disease

Coronary artery bypass graft surgery (CABG) and percutaneous coronary intervention (PCI) are used with medication to treat coronary artery disease in diabetes. They are coronary revascularization treatments. They are used to increase blood flow to your heart muscle.

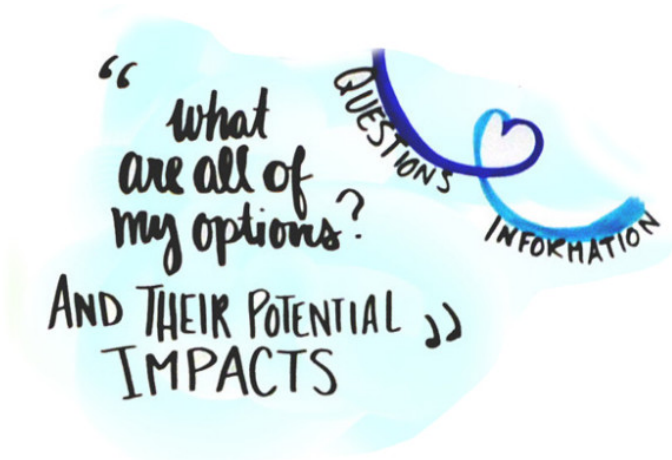
***What is a *randomized study*?**

Randomized studies use a chance process (like flipping a coin) or computer number system that cannot be changed by the researchers to determine which heart treatment a patient gets. This means there is an equal chance that patients get PCI or CABG. Studies randomly assign patients to reduce the possibility that the patients receiving one treatment are different in some way (say, their age) from patients receiving the other treatment.

More Info

Supporting a Healthy Lifestyle When You Have Coronary Artery Disease

- General information about [living well with heart disease](#)
- General information to [help you control stress](#)
- Information on [managing high cholesterol](#)
- Information on [managing high blood pressure](#)
- Learn about [heart healthy eating](#)
- Get [help to make healthy food choices](#) (*translation services available in 130 languages*)
- Get [advice about exercise](#) (*translation services available in 130 languages*)
- Guidelines for [angina and physical activity](#)
- Guidelines for [previous heart attack and physical activity](#)
- Connect with a [community of survivors](#)



More Info

I Identify as Indigenous and I Want More Culturally Appropriate Information

- Information about [healthy lifestyle for people with diabetes](#)
- [Wellness information from the First Nations Health Authority](#)
- [Financial support for medical transportation](#) is available to help you get to/from your medical appointments and treatments