



Drug Infusion Testing for Heart Rhythm Conditions

Why is this test being done?

Your heart specialist (cardiologist) has asked that you have this special test done for one of the following reasons:

- You have had signs and symptoms that could be caused by an abnormal heart rhythm.
- You have changes on your regular ECG that could show an inherited heart rhythm condition.
- You or someone in your family has had their heart stop suddenly (cardiac arrest) but no one knows why it happened.
- Someone in your family has had changes on a regular ECG that show a heart condition you might have inherited.

What is a drug infusion test?

This test is a special way for us to take a close look at your heart's electrical system. Some changes cannot be seen during a regular electrocardiogram (ECG). These rhythm changes might only appear in certain activities or situations.

When testing, we use different medications to assess your heart. The medications mimic or simulate activities such as exercise, stress, rest, and even sleep. Using the medications, we speed up or slow down your heart rhythm just like it would during these activities.

The results of this test are used to identify whether or not you have a type of inherited heart rhythm condition. If you do, your heart specialist can make a plan for treating the condition.

Before the test

- You change out of your top and into a hospital gown. You can wear your glasses, hearing aids, and dentures.
- You meet the doctor, nurse, and technician doing the test.

- Tell us if you have any allergies or if you have ever had a reaction to any medicines.
- The doctor explains the test to you and any possible problems that could happen. To make sure you understand, please ask any questions. Once you understand the test, we ask you to sign a consent form.
- We ask you to empty your bladder.
- We start an intravenous in one of your arms or hands (commonly referred to as an 'IV' - sounds like eye-vee).
- We connect you to a heart monitor called the electrocardiogram (ECG) machine. This machine records the electrical activity of your heart.
- To do this, we stick small ECG patches on your chest.
- We might have to remove some hair from your chest with clippers.
- We print an ECG recording before we start the test.

How is the test done?

Based on your medical history and the results of previous tests, we give you one or both of these medications. We give each medication in small doses which are relatively safe.

Epinephrine (e-pi-ne-fren), also known as adrenalin (ah-dren-ah-len), is a natural hormone made by our body during exercise and stressful situations. We give a small amount of epinephrine to speed up your heartbeat by about 20 to 30 beats per minute. This amount of epinephrine is much less than what your body would make during light exercise.

The epinephrine allows us to see how your heart reacts when stressed. It helps us to look for certain conditions affecting the electrical activity of your heart. Two specific conditions we look for are called 'Long QT Syndrome' and 'Catecholaminergic Polymorphic Ventricular Tachycardia'. If you have either of these, the heart specialist who ordered this test will explain these in more detail after the test and/or during a follow up appointment.

Procainamide (pro-kay-nah-mide) is a medication that is usually given to fix abnormal heart rhythms. We give a small amount and look for a slowing of the

heartbeat. This medication helps us to look for a delay in the electrical activity of the heart. One condition we look for is called 'Brugada Syndrome'. If your test detects a Brugada ECG pattern, the heart specialist will explain it in more detail after the test and/or during a follow up appointment.

Who does the test?

A doctor who specializes in heart rhythms (an electrophysiologist or heart rhythm specialist) is present the whole time we do this test. This doctor, together with a nurse and technician, will closely watch your heart activity and treat any problems you might have.

Where is the test done?

The test is always done in a hospital. We will give you specific information about where your test will be done when we schedule it.

How long does the test take?

It depends on which medications you are scheduled for.

- If we are using Epinephrine: 2 to 3 hours
- If we are using Procainamide: up to 3 hours
- If we use both: up to 6 hours

The day of the test

- Nothing to eat or drink after midnight the day before your procedure.

*If you normally take medicines in the morning, you can take them but *only* with a small sip of water.

- Bring with you:
 - your BC Services Card (CareCard)
 - photo identification such as a driver's license
 - all medicines you are currently taking
 - a book or magazine to read
 - a snack for after your test
- Arrive at the hospital at the time given to you.
- Report to the location in the hospital where the test is done.

- We might ask you to sit in our waiting area until we are ready for you. If someone comes with you, that person can sit in the waiting area until you are ready to go home.

During the test

- We give the medication through your IV.
- We check your pulse and blood pressure often.
- We watch how your heart responds to the effects of the medications by closely watching the electrical activity of your heart.
- We print a number of ECG recordings after the test.
- We keep you in the hospital for about 1½ hours after the test to let the medication wear off.
- We print one final ECG recording to look at your heart rhythm before you leave.

Are there any problems that could happen with this test?

It is possible (though unlikely) that you will feel some effects of the medications.

- If given epinephrine, you might notice a headache and feel your heart pounding.
- If given procainamide, you might feel lightheaded or dizzy.

If you suffer any effects (headache, heart pounding, and light-headedness) of either medication, we are able to quickly reverse them. A medication called 'metoprolol' reverses epinephrine and one called 'isoproterenol' reverses procainamide.

As with any medical test or medication, there are risks. The chances of having a very serious problem from the test are very small. Less than 1% of people have a problem. It depends on your health and any heart condition you might have. We always have emergency equipment close by in case we need it.

Tell us right away if you notice any of the following:

- feeling sick to your stomach (nauseated)
- shortness of breath
- chest pain
- feel your heart is skipping beats (palpitations)
- severe dizziness or feeling like you are going to faint

You might feel some soreness and have some bruising from the intravenous in your arm. Just like any time there is a cut through the skin, there is a small chance the site of the intravenous could get infected. Contact your family doctor if you notice any redness or swelling around the site.

What if I have questions about the test?

If you have any questions about the test, call the BC Inherited Arrhythmia Program between 8:00am and 4:00 pm, Monday to Friday, at 250-595-1551.

When will I know the results of the test?

Usually, the heart specialist gives you the results of the test while you are at the hospital. Sometimes, the doctor needs more time to review the results. If this is the case, the heart specialist's office calls you within one week of the test to give you the results. We also send a letter with the results to any doctors involved in your care.

Before you leave, we give you instructions for follow-up, including any more tests for you or your family.

If we think the test results show that your heart rhythm condition is inherited or genetic, we will offer you an appointment in the BC Inherited Arrhythmia Program.

At this appointment a heart specialist and a genetic counsellor will explain the results and what these mean for you and your family in more detail.

When to get help

After the test, if you do not feel well, contact your family doctor, the cardiologist who ordered the test, or call the BC Inherited Arrhythmia Program between 8:00 am and 4:00 pm, Monday to Friday, at 250-595-1551

Go to the nearest Emergency if you have *any* of the following:

- shortness of breath
- chest pain
- new palpitations
- severe light-headedness
- fainting

Ask Emergency staff to contact the 'on call' heart specialist or heart rhythm specialist.



British Columbia Inherited Arrhythmia Program
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