

Permanent Pacemaker (PPM)

What Should I Expect?

A permanent pacemaker (PPM) is an electronic device that is usually implanted in the upper chest area. The PPM continuously monitors the heart rhythm and will pace the heart when the heart beat becomes too slow. Patients will rarely be aware of the pacemaker working. This is all done automatically and requires no intervention from the pacemaker recipient.

The PPM consists of a generator and wires with electrodes, called leads. The generator is a little larger than a quarter and is about the thickness of 3-4 quarters stacked together. It is made up of a battery, which takes up most of the device, and a small computer. The generator monitors the heart rhythm continuously and when it identifies a slowing of the heart rhythm, it produces the pacing impulses. The PPM's pacing functions can be adjusted to meet your particular needs.

The leads are insulated, flexible wires that are placed within the heart chamber and attached to the heart muscle and the PPM generator. The lead carries the electrical energy to the heart muscle. The lead system can relay or monitor the heart rhythm and can store the information in the memory of the PPM generator. Depending on the type of PPM that is implanted, one or two leads may be used.

Who needs this type of procedure?

Anyone who has a slow heart rhythm that does not speed up normally, anyone who has had a passing out episode (syncope) that is related to a slow heart rhythm, anyone who has poor electrical communication between the top chambers of the heart and the bottom chambers of the heart and anyone who has a heart rhythm that may become too slow with medications they are going to need to take. Sometimes you will need to have a pacemaker because your heart rate is too fast and your doctor needs to perform an ablation of the AV Node, a special type of procedure to slow the heart rate.

The most common reasons for needing a pacemaker are Sick Sinus Syndrome (SSS), Heart Block and severe bradycardia. The biventricular PPM, also called a resynchronization or heart failure PPM, helps the heart work better by improving its ability to pump. It helps to restore timing of the heart's contractions so the heart chambers may fill with blood and work more efficiently. It is only recommended for patients who have heart failure, specific problems with the heart's electrical timing or those that need to have an ablation of their AV node.

What physicians perform this procedure?

A cardiologist or a specially trained cardiologist, an electrophysiologist, implants a PPM. The procedure is performed in a special area of the heart catheterization lab called the electrophysiology lab or in the operating room. Specially trained nurses and technicians will assist the doctor during the procedure. Before the procedure, the doctor will discuss the risks of the procedure with you and ask you to sign a consent form that gives your permission to go ahead with the implant.

What should I expect before the procedure?

Lab work that must be completed includes Basic Metabolic Panel, CBC with platelets and differential and PT/INR. This is often done in the hospital on the day of your procedure but may need to be done before. If you are having your labs performed at another facility, ask for the results of the tests to be faxed to your doctor's office at least 48 hours before the procedure.

If you are a woman of childbearing age, you will need to have a urine pregnancy test on the day of the procedure. If you are pregnant, the procedure may have to be post-poned or cancelled. If you think you might be pregnant, you should contact the doctor who will be doing the procedure.

If you are on blood thinners such as coumadin or warfarin, you will be told if and when to stop taking them before surgery. Usually, it is 4-5 days before the procedure. If you have an artificial heart valve or have had a stroke in the past, please check with your physician before stopping the blood thinner.

If you take medicines to control your heart rhythm or medicine for diabetes to control your blood sugar, or if you take a "fluid pill" such as lasix, please check with your doctor to see if you need to stop taking them.

Do not use powder or lotion on your body for 24 hours before the procedure.

Do not eat or drink anything after midnight the night before the procedure. You may have small sips of water with any medicines you take.

What will I experience?

An IV will be placed into a vein in your arm. The nurse will give medication through the IV that will make you drowsy. You will be awake but sedated. It will be unlikely you will remember anything about the procedure itself. An area on your chest, below your collar bone and shoulder, will be cleaned with special soap. The area will be draped with special drapes to keep it clean. Your face will be covered briefly until the drapes can be positioned properly. Afterward, the drapes will be moved but you will only be able to see your nurse during the procedure. Fortunately, you will likely be sleeping for the majority of it. Local anesthesia (like the medication used at the dentist office) will be injected under the skin in the area where the PPM will be placed to make it numb. After the numbing medication is used, the remainder of the procedure will be essentially painless. An 1 ½ inch incision is made so that a "pocket" can be formed between the fatty layer and the muscular layer of the chest for the PPM to be inserted. The leads are placed in a vein in the shoulder and advanced into the heart chamber. They are screwed into the heart muscle with very small screws and then connected to the PPM generator. This part of the procedure can take between 45 minutes and 3-4 hours depending on many factors. Most patients only complain of some back discomfort during the procedure because they have to lie flat for the entire procedure.

What should I expect just after the procedure?

Once the PPM implant has been completed you will be awake, but you may be drowsy. You will be admitted to the hospital overnight.

The next morning you will have a chest x-ray that will show the side and the front view of your chest. The doctor will look at the x-ray to make sure the leads remain in proper position. Your PPM will also be checked by the doctor, a specially trained nurse, or a representative from the PPM company. The PPM will be checked with a computer called a programmer. Each time you have an appointment with your doctor in the Device Clinic, your PPM will be checked in a very similar fashion.

Once the x-ray and the PPM have been checked, the doctor and nurse will explain your discharge instructions and medicines. You will be prescribed antibiotic pills to take for 3 days, a fairly strong pain killer to ease the pain over the next few days and your usual medicines