

Understanding Coronary Artery Disease, Cardiac Catheterization, and Treatment Options

A Guide for Patients

Coronary Artery Disease

If you or a member of your family has been diagnosed with coronary artery disease (CAD), you may have questions about the disease and its treatment, especially if your doctor has recommended balloon angioplasty, implantation of a coronary stent, or Intravascular Brachytherapy. This booklet answers some of the questions patients with coronary artery disease often ask.

Angioplasty - A balloon procedure to open an obstruction or narrowing of a blood vessel. Also known as percutaneous transluminal coronary angioplasty (PTCA).

Stent - An expandable, slotted metal tube, inserted into a vessel. A stent acts as a scaffold to provide structural support for a vessel. A drug-*coated* stent allows for the placement of that particular drug at the stent implantation site. A drug-*eluting* stent allows for the active release of that particular drug at the stent implantation site.

Intravascular Brachytherapy - The administration of a therapeutic dose of radiation from within a vessel to a specific area of vascular disease to prevent the re-occurrence of an obstruction or narrowing of that vessel.

What Causes Coronary Artery Disease?

The heart is a muscle that acts like a pump to move blood throughout the body. To function properly, the heart must receive oxygen. Oxygen is supplied to the heart by the coronary (heart) arteries that wrap around the surface of the heart. When coronary artery disease (CAD) is present, blood flow through the arteries can be reduced. When this happens, the heart muscle may not receive enough oxygen, and chest pain (called angina) may be felt.

CAD is caused by the build-up of fatty substances, such as cholesterol, that collect along the lining of the coronary arteries, in a process known as atherosclerosis. You may hear this referred to as a “plaque”, “lesion”, “blockage” or “stenosis”. This means that there is a narrowing in the artery caused by a build-up of substances which may eventually block the flow of blood. Because the coronary arteries supply oxygen-rich blood to the heart, untreated blockages can be very serious and can lead to a heart attack (myocardial infarction) or even death. Over the course of a person’s lifetime many influences can cause one or more of your coronary arteries to become narrowed or blocked.

Symptoms of Heart Disease

Coronary artery disease can progress very slowly, often without symptoms. Most people do not realize that they have heart disease. In fact, the first sign that something may be wrong could be an episode of angina, or even a heart attack. Typical angina symptoms are feelings of pressure, tightness, or pain in the chest, arm, back, neck or jaw. Symptoms also include heartburn, nausea, vomiting, excessive sweating, fatigue or shortness of breath. Angina may occur as only one or many of these symptoms.

Although the exact cause of CAD is not known, there are certain risk factors that are often seen in patients with coronary artery disease. These factors include: high blood pressure, having a close relative with heart disease, high cholesterol and/or triglycerides in your blood, diabetes, smoking, excessive weight, and lack of a regular exercise program. Males are more likely to develop coronary artery disease than females.

Risk Factors for CAD

You are at greatest risk for CAD if you:

- are male
- have high blood pressure
- are diabetic
- smoke cigarettes
- are overweight and/or inactive
- have a relative with the disease

How is Heart Disease Diagnosed?

You may have experienced symptoms of heart disease which caused you to seek your doctor's attention. If you have experienced symptoms or have an increased risk of heart disease, your doctor may recommend that you have an exercise stress test, an electrocardiogram (EKG), chest x-ray, and blood tests. Stress tests measure changes in the electrical activity of your heart as you perform controlled exercise, and may show if heart muscle is at risk of dying or if there has been damage to your heart. These results may indicate a need for further testing. Your doctor may then recommend a cardiac catheterization or coronary angiogram. It is one of the most useful methods to diagnose coronary artery disease because it allows the doctor, under x-ray, to see exactly where the coronary arteries are narrowed or blocked.

Cardiac - Relating to the heart.

Catheterization - A procedure that involves passing a tube (catheter) through blood vessels and injecting dye to detect blockages.

Coronary Angiogram - A test used to diagnose CAD using the catheterization procedure. Contrast dye is injected into the coronary arteries via a catheter, and this allows the doctor to see, on an x-ray screen, the exact site where the artery is narrowed or blocked.

Cardiac Catheterization

Cardiac catheterization is performed in a specialized area in the hospital called a Cardiac Catheterization Laboratory. The night prior to the test, you may not be allowed to eat or drink anything after midnight. Before the catheterization, a doctor will explain the procedure to you and ask certain questions about your health. While you are discussing this test, you should ask any questions or mention any concerns or worries that you have about the procedure. After the procedure has been explained, you will be asked to sign a consent form, which gives your permission for the test to be performed.

Before your procedure begins, you will be taken to the room where the cardiac catheterization will be done. Your heart rhythm will be monitored and an intravenous line (IV) will be placed to provide you with fluids and to make it easier to administer any needed medication.

Your arm or groin will be shaved and cleaned with an antiseptic solution and sterile drapes will be placed in this area. Before the procedure begins, you will receive local anesthetic to numb the area. You may feel some pressure and a burning sensation at the site, but it will only last a few seconds.

During the procedure you will not need general anesthesia, but a sedative may be given to help you relax. It is important for you to remain awake so that you can move or breathe deeply when asked to do so by the doctor. Following these instructions may improve the quality of the x-ray pictures.

During this procedure a long tube called a catheter is placed through another small tube, (called a catheter sheath introducer) that is inserted in your arm or groin. The catheter is guided to your heart and then into the opening of the arteries. The catheter provides a pathway for a special liquid dye to flow into the arteries. This liquid dye allows the doctor to see the shape and size of your arteries as well as the function of your heart muscle on an x-ray screen.

Once the catheter is positioned, the doctor will take pictures of your heart. With the catheter in the main pumping chamber of the heart (left ventricle), some dye will be injected through the catheter and a picture will be taken. The dye makes it easier for the doctor to see the shape and overall function of your heart. You may be asked to take a deep breath and hold it, which allows the doctor to have a clearer view of your heart on the x-ray screen. As the pictures are taken, the noise of the camera may sound like a motor. You may also feel a hot flush when the dye is injected. This feeling is to be expected and normally passes in 15 to 30 seconds.

Pictures will also be taken of your coronary arteries from several different angles. Once all these pictures have been developed and your doctor has been able to review them, he or she will be able to discuss the final results with you. If the cardiac catheterization showed that there were one or more blockages in your coronary arteries, then further treatment may be recommended.

Can Heart Disease Be Treated?

Most patients with heart disease receive medication to help prevent a heart attack, and doctors usually recommend controlled exercise and a low-fat diet. Medication may also be prescribed to help lower cholesterol levels in the blood. However, there are no drugs available to eliminate blockages within the heart arteries. If heart disease is present, you may be at risk of having a heart attack if the disease is not treated. Until several years ago, the only treatment for blockages of heart arteries was Coronary Artery Bypass Graft (CABG) surgery.

Today, there are several options available to you. Your doctor can discuss these with you to determine which option is best for you.

Balloon Angioplasty

This procedure may be done immediately following your catheterization or you may be sent home and instructed to return for the procedure. You will be asked not to eat or drink anything after midnight on the night before your procedure. It is important that you follow these and any other instructions carefully.

If you have had a cardiac catheterization procedure, angioplasty is similar in many ways. Your heart rhythm will be monitored, an intravenous line will be inserted in your arm, your arm or groin area will be shaved and cleaned and the procedure will be performed through that area. As with cardiac catheterization, it is important for you to follow your doctor's instructions during the procedure.

Balloon Angioplasty Step-By-Step

- ?? After local anesthetic is given, a catheter sheath introducer is inserted into the artery. Then, a narrower and longer tube, called a guiding catheter, is passed through the sheath to the heart.
- ?? Contrast dye (x-ray dye) is injected through the guiding catheter to allow the doctor to see the arteries of your heart on an x-ray machine called a fluoroscope.
- ?? While observing the arteries on the x-ray screen, (a) the doctor threads a guidewire through the guiding catheter and advances it to the diseased artery.
- ?? A balloon catheter is inserted over the guidewire (b) and positioned at the site of the blockage.
- ?? Once the balloon catheter is in place, the balloon is expanded (c). As the balloon expands, it compresses the fatty deposits (plaque) against the lining of the artery. The balloon may be expanded one or more times before it is removed. X-ray pictures are taken so that the doctor can monitor your artery as the blood flow is improved.

?? Once the balloon catheter is removed, the fatty deposits remain compressed, and blood flow is restored to your heart (d). The balloon procedure may last from 30 to 90 minutes, but varies from patient to patient.

It is not uncommon to experience some discomfort or a pressure sensation in your chest when the balloon is inflated. During the procedure you will be asked to remain very still. You will be asked how you are feeling; be sure to let your doctor know if you experience any discomfort.

Coronary Artery Re-narrowing May Occur After Balloon Angioplasty

It is not uncommon for patients to develop a re-narrowing in the same site as the initial balloon procedure. In fact, one-third to one-half of patients who have successful balloon angioplasty will return in the first 3-6 months after the balloon procedure. This kind of narrowing is called “restenosis” and is due to a type of scar tissue formation.

In order to lower the risk for restenosis, your doctor may recommend a procedure called coronary stent implantation. Experience has shown that use of a coronary balloon-expandable stent reduces the rate of restenosis and improves the success rate of balloon angioplasty.

What is a Coronary Artery Stent?

A coronary stent is a small, slotted, metal tube that is mounted on a balloon catheter. It is inserted into your artery after a wider channel has been created by a balloon, and is positioned at the site of the blockage. When the balloon is inflated, the stent expands and is pressed into the inner wall of the artery. The balloon is then deflated and removed with the stent remaining in place. The stent acts as a scaffold that helps to hold the artery open, which improves blood flow and relieves symptoms caused by the blockage.

A stent is a permanent implant that remains in your artery. Over the next month, your cells will form a natural covering which will hold the stent securely in place. Stents will not rust or move once they are inserted inside your artery. Persons allergic to 316L stainless steel may suffer an allergic response to this implant. It is important to notify your physician if you have any metal allergies. Although you may be instructed to avoid having an MRI (Magnetic Resonance Imaging) within eight weeks after your stent implantation, tests have shown that this procedure will not affect the stent or make it move - waiting eight weeks will allow for adequate tissue coverage to occur over the stent. Metal detectors found in airports and appliances such as microwave ovens also will not affect the stent or make it move.

There are three (3) categories of stents currently available:

- 1) **Uncoated stents.** The Bx VELOCITY® Stent is an example of an uncoated stent.
- 2) **Drug-coated stents.** The Bx VELOCITY® Stent with HEPACOAT™ (Carmeda ® End-point Attached Heparin) is an example of a drug-coated stent. The Bx VELOCITY® Stent with HEPACOAT™ (Carmeda ® End-point Attached Heparin) is an example of a drug-coated stent. The Bx VELOCITY Stent with HEPACOAT is coated with the anti-coagulant drug called heparin. A drug-coated stent allows for the **placement, not release**, of that particular drug at the stent implantation site.
- 3) **Drug-eluting stents.** The CYPHER? sirolimus-eluting stent is an example of a drug-eluting stent. The CYPHER? sirolimus-eluting stent contains a drug called sirolimus. A drug-eluting stent allows for the **active release** of that particular drug at the stent implantation site.

Preparation for a Coronary Stent

If you know in advance that you will be receiving a coronary stent, your doctor will ask you to follow certain instructions, in addition to those listed for balloon angioplasty. For several days before the procedure, you may be asked to take aspirin and other prescribed medications.

Be sure to let your doctor know:

- If you cannot take aspirin
- If you are taking any other medications
- If you have any drug allergies
- If you have a history of bleeding problems
- If you have any metal allergies (i.e. 316L stainless steel)

How is a Coronary Stent Implanted?

A coronary stent may be placed after the initial balloon procedure, which is done to create a wider opening for the stent. You will have the same feelings when the stent is put in place as when the balloon was expanded during the procedure.

- ?? The stent, which is mounted on balloon catheter, is inserted into the artery and placed at the site of the initial blockage.
- ?? When the balloon and stent are positioned, the balloon is inflated. The stent expands and becomes firmly pressed into the inner wall of the artery. One or more stents may be used at the site that was narrowed or blocked.
- ?? X-ray pictures are taken so that the doctor can see the stent in your artery. Additional balloon inflations may be needed to fully expand the stent.
- ?? The balloon catheter is deflated and removed along with the guidewire and guiding catheter.
- ?? The stent will remain in place permanently, keeping the artery open.

Coronary Stent Re-narrowing (In-Stent Restenosis) May Occur After Coronary Stenting

Occasionally some patients develop a re-narrowing within the stent. This kind of narrowing is called “in-stent restenosis” and is due to a type of scar tissue formation. In fact, 10 to 20 percent of patients who have successful stent implantation develop in-stent restenosis.

To lower the risk of in-stent restenosis, your doctor may recommend implantation of a CYPHER? Sirolimus-eluting stent. Experience has shown that use of the CYPHER? sirolimus-eluting stent can reduce the rate of in-stent restenosis and repeat cardiac intervention.

To lower the risk for repeat in-stent restenosis, your doctor may recommend a procedure called Intravascular Brachytherapy. Experience has shown that use of the Checkmate™ Intravascular Brachytherapy System can reduce the rate of repeat in-stent restenosis.

What is the CYPHER? Sirolimus-eluting stent and how does it work?

The CYPHER? Sirolimus-eluting stent is designed to prevent re-narrowing from occurring within the stent (in-stent restenosis). It consists of a stainless steel Bx VELOCITY? coronary stent with a thin coating of drug (sirolimus) on its outer surface. The Bx VELOCITY? stent is designed to provide mechanical support in the artery, while the drug (sirolimus) is slowly released into the artery wall around the stent. The action of the drug (sirolimus) is intended to limit the overgrowth of normal tissue as the healing process occurs following coronary stent implantation. Overgrowth of normal tissue is thought to be a major factor responsible for re-narrowing of the artery after stenting.

Has this treatment been used before?

Yes, the CYPHER? Sirolimus-eluting stent has been used to treat many patients. Studies suggest a greater than 90% decrease in the in-stent restenosis rates compared with patients treated with non drug-eluting stents.

How is treatment with the CYPHER? Sirolimus-eluting stent performed?

Placement of a CYPHER? Sirolimus-eluting stent is no different from the placement of a non drug-eluting stent, described earlier in this booklet. You will be brought to the cardiac catheterization laboratory and prepared for your heart catheterization. The CYPHER? Sirolimus-eluting stent will be placed after the initial balloon procedure, which is done to create a wider opening for the stent. You will have the same feelings when the stent is put in place as when the balloon was expanded during the procedure.

- ?? The stent, which is mounted on a balloon catheter, is inserted into the artery and placed at the site of the initial blockage.
- ?? When the balloon and stent are positioned, the balloon is inflated. The stent expands and becomes firmly pressed into the inner wall of the artery. One or more stents may be used at the site that was narrowed or blocked.
- ?? X-ray pictures are taken so that the doctor can see the stent in your artery. Additional balloon inflations may be needed to fully expand the stent.
- ?? The balloon catheter is deflated and removed along with the guidewire and guiding catheter.
- ?? The stent will remain in place permanently, keeping the artery open.

Preparation for a CYPHER? Sirolimus-eluting stent

If you know in advance that you will be receiving a CYPHER? Sirolimus-eluting stent, your doctor will ask you to follow certain instructions. For several days before the procedure, you may be asked to take aspirin and other prescribed medications.

Be sure to let your doctor know:

- If you cannot take aspirin
- If you cannot take antiplatelet medication
- If you are taking any other medications
- If you have any drug allergies
- If you have a history of bleeding problems
- If you have any metal allergies (i.e. 316L stainless steel)

What are the risks of treatment with the CYPHER? Sirolimus-eluting stent?

Studies have shown that the risks associated with the CYPHER? Sirolimus-eluting stent are equivalent to or lower than the risks associated with the Bx VELOCITY (non drug-eluting) stent.

How long is the hospital stay?

Your hospital stay will be the same as for an angioplasty or non drug-eluting stent procedure. Many patients are able to go home the day following the procedure. The amount of time that you may stay in the hospital will depend on several factors including any difficulties that you may have experienced during the procedure and how well the puncture site is healing. The amount of time depends on your physician's discharge orders.

What Happens After Your Angioplasty or Stent (non drug-eluting stent or CYPHER? Sirolimus-eluting stent) Procedure?

After your procedure, you will be moved to a special care unit where nurses will be able to monitor your heart rhythm and blood pressure very closely. At this time, the catheter sheath introducer (tube) may be removed and pressure will be applied to the puncture site, either your groin or arm, until the bleeding has stopped. Your puncture site will be watched closely for any signs of bleeding. If your leg was used to insert the catheters, you may be instructed to lie flat for several hours, and you may not be allowed to bend the leg that was used. Should you see any blood or feel warmth at the area of the puncture site, notify your nurse immediately. Your extremity will be monitored for any changes in color, temperature and sensation.

Once you have returned to your room, you may be able to eat and drink and your family may visit depending on your doctor's orders. It is recommended to eat foods that are light until you are able to sit upright. Drink all of the fluids that are offered, because they will help to flush the x-ray dye through your kidneys and out of your body. Your doctor will advise you when you can get out of bed and walk.

What is the Checkmate™ Intravascular Brachytherapy System?

The Checkmate™ Intravascular Brachytherapy System is designed to prevent re-narrowing from occurring within a stent (in-stent restenosis). It delivers a small amount of Gamma radiation locally to the re-opened stented area. Radiation treatment is intended to limit the overgrowth of normal tissue as the healing process occurs following the procedure to re-open the stent. Overgrowth of normal tissue is thought to be a major factor responsible for re-narrowing of the artery after treatment.

Why should treatment with the Checkmate™ Intravascular Brachytherapy System be considered:

Within months following stenting, approximately 10-20% of patients have re-narrowing of their coronary stent and need additional treatment. Brachytherapy is currently the only approved treatment for the problem of in-stent restenosis. Treatment should reduce the need for additional interventional cardiology procedures or bypass-surgery due to in-stent restenosis.

Has this treatment been used before?

Yes, the Checkmate™ Intravascular Brachytherapy System has been used to treat many patients. These patients underwent a procedure to re-open their stent and then were treated with Gamma radiation. Studies suggest a greater than 40% decrease in the in-stent restenosis rates compared with patients not treated with Gamma radiation.

How does the Checkmate™ Intravascular Brachytherapy System work?

After re-opening the stented area, a Checkmate™ Catheter is positioned in the treated area of the coronary artery. This catheter allows delivery of Gamma radiation locally to the artery for a precise amount of time, usually 15 to 25 minutes. The precise time is calculated by a medical physicist. When the treatment time is over, the radiation sources and the Checkmate™ Catheter are removed.

Be sure to let your doctor know:

- If you cannot take antiplatelet medication
- If you cannot take aspirin
- If you are taking any other medications
- If you have any drug allergies
- If you have a history of bleeding problems
- If you have had radiation therapy in the past

How is treatment with the Checkmate™ Intravascular Brachytherapy System performed?

Like your previous stent procedure you will be brought to the cardiac catheterization laboratory and prepared for your preliminary heart catheterization. An interventional coronary procedure will be done, re-opening the blockage within the coronary stent. Following this procedure, the Checkmate™ Catheter is positioned in the area of previous in-stent restenosis. Once the catheter is in place, the radiation source will be delivered to the treatment site and remain in place for the prescribed time. When the treatment time is completed, the source and catheter are removed. No radiation remains in the body. Your doctor will then take final x-rays to determine if your procedure is complete.

What will the Checkmate™ Intravascular Brachytherapy treatment feel like?

During any interventional procedure you may feel discomfort as the catheters are being positioned. Remember that these catheters are entering narrow areas of blockage in your coronary artery. You may feel discomfort in your chest when the Checkmate™ Catheter is positioned in your coronary artery, but again, this is due to the presence of the

catheter and not because of radiation. People generally do not experience any added sensations due to this radiation.

What are the risks of radiation?

There are potential risks associated with radiation of the heart. The dose of radiation is localized to the treatment site in the coronary artery and the risk of complications is thought to be low. The dose of radiation to the body is generally less than that received during a heart catheterization. The long-term risks of Gamma radiation in the coronary artery are unknown at this time.

During clinical studies an observation was made that there is a small chance of having a blockage occur within the treated stent area when a new stent is used to re-open the original stent and the patient is not on antiplatelet therapy for more than 8 weeks. This blockage is caused by clumping of cells and is called late thrombosis. The use of antiplatelet therapy (medication used to prevent this clumping of cells) has demonstrated an ability to reduce the occurrence of late thrombosis. Your doctor will attempt to avoid placement of a new stent. However, if placement of a new stent is necessary, you will be placed on antiplatelet therapy as directed by your physician.

How long is the hospital stay?

Treatment with the Checkmate™ System will add about 20 minutes to your procedure in the cardiac cath lab. Your hospital stay should be the same as for an angioplasty or stent procedure.

What Happens After Your Angioplasty, Stent or Checkmate™ Intravascular Brachytherapy Procedure?

After your procedure, you will be moved to a special care unit where nurses will be able to monitor your heart rhythm and blood pressure very closely. At this time, the catheter sheath introducer (tube) may be removed and pressure will be applied to the puncture site, either your groin or arm, until the bleeding has stopped. Your puncture site will be watched closely for any signs of bleeding. If your leg was used to insert the catheters, you may be instructed to lie flat for several hours, and you may not be allowed to bend the leg that was used. Should you see any blood or feel warmth at the area of the puncture site, notify your nurse immediately. Your extremity will be monitored for any changes in color, temperature and sensation.

Once you have returned to your room, you may be able to eat and drink and your family may visit depending on your doctor's orders. It is recommended to eat foods that are light until you are able to sit upright. Drink all of the fluids that are offered, because they will help to flush the x-ray dye through your kidneys and out of your body. Your doctor will advise you when you can get out of bed and walk.

Many patients are able to go home the day following the procedure. The amount of time that you may stay in the hospital will depend on several factors including any

difficulties that you may have experienced during the procedure and how well the puncture site is healing. The amount of time depends on your physician's discharge orders.

Your Medications are Important Whether You are Treated With a Stent or Intravascular Brachytherapy

?? After you leave the hospital you may be instructed to take medications. It is very important that you take your medications exactly as prescribed.

?? Be sure not to miss any doses.

?? Call your doctor if you feel that you cannot tolerate your medications or develop any side effects such as bleeding, upset stomach, rash, or have any questions.

Depending on which antiplatelet medications are prescribed, you may need to have follow-up blood tests to monitor the effects of the medicine on your blood. This can be done at your local hospital laboratory or primary care doctor's office and you may have breakfast before having the blood taken.

It is very important to follow these instructions:

1. You must follow your medication schedule exactly.
2. Do not stop taking any of the prescribed medications unless you are instructed to do so by the doctor who performed the procedure.
3. If you experience any side effects of the medications such as nausea, vomiting, and bleeding or rash, notify your doctor.
4. Notify your doctor immediately if you experience chest pain (angina) or notice any changes such as more severe or frequent chest discomfort, especially in the first month after a procedure.
5. If you report to an emergency room, show them your identification card which identifies you as a stent implant patient and/or a patient who received intravascular brachytherapy.

6. Keep all appointments for follow-up care including your blood tests. Avoid Magnetic Resonance Imaging (MRI) medical scans within eight weeks of stent placement without clearance from your cardiologist.
7. If you are scheduled to see the dentist in the first month after your procedures, notify your cardiologist or family doctor of your appointment.

You will be discharged to the care of your cardiologist or family doctor. After returning home, if you experience any pain, discomfort, bleeding of any kind, rash or itching, contact your doctor or the hospital. You should be able to return to your normal activities such as work, sports, and sex very soon. Check with your physician prior to doing anything that is physically strenuous.

After You Go Home

If you received a stent or Checkmate™ Intra-vascular Brachytherapy you will be given a small wallet-size identification card containing information about the location of your stent or therapy and the date it was performed, along with important doctors' names and telephone numbers. This card should be kept with you at all times. It is important to alert any doctor that is treating you that you received a stent and/or Checkmate™ Intravascular Brachytherapy.

Follow-Up Visits

You may be instructed to return to see your cardiologist or family doctor. The first visit will usually take place within the first 2-4 weeks after your procedure and every six months for the first year. If you are doing well, the doctor may recommend yearly visits thereafter.

Diet and Lifestyle Changes

To help yourself stay healthy in the future, you are encouraged to make important diet, exercise and lifestyle changes. Some patients may need few modifications while others may need to make many changes. Those patients who are able to reduce the fats and cholesterol in their diets are less likely to redevelop blockages within the stent. A low-fat, low-cholesterol diet can lower the levels of fat in your blood and reduce your risk. Eating healthy foods in the right portions will also help you to maintain or achieve a healthy weight.

In addition to a healthy diet, it is extremely important to avoid smoking. Smoking not only increases the risk of worsening coronary artery disease, but it increases the chance that your PTCA or stent site will close. If you need help with quitting, notify your health care provider.

Other factors that can contribute to heart disease such as stress and lack of exercise should also be evaluated. Steps can be taken to reduce stress in your life and your physician can help you develop a controlled exercise program.

Even after your full recovery, your doctor may want to check your progress from time to time. You can reduce your risk of developing future disease by making healthy lifestyle choices. Be sure to contact your doctor or health care provider if you have any questions or need assistance regarding your lifestyle modifications.

Summary

You have a very important role to play in order to ensure that your procedure will be successful. It is essential that you cooperate with your physician and follow through with your responsibilities as part of the patient/medical team. If you have any questions or concerns, please contact your physician to discuss them. It is important that you get the most benefit from your treatment and join the thousands of people with coronary artery disease who are leading healthy, productive lives.

For more information on patient education, please visit:
www.FightCoronaryDisease.com.

Glossary

Angina (Pectoris) - chest discomfort, pain, tightness or pressure. May also have associated pain in neck, jaw, back or arm. May include profuse sweating, nausea, or shortness of breath. Angina may be a single symptom or a combination of these symptoms.

Angioplasty - A balloon procedure to open an obstruction or narrowing of a blood vessel. Also known as percutaneous transluminal coronary angioplasty (PTCA).

Anticoagulant - A substance that slows, suppresses or prevents the clotting of blood.

Antiplatelet - A medicine that reduces the clumping of platelets in the blood. An antiplatelet medicine helps thin the blood to prevent clot formation.

Atherosclerosis - A disease process in which fatty substances (plaque), such as cholesterol, are deposited on the inner lining of blood vessels.

Coronary Artery Bypass Graft (CABG) Surgery - An operation in which a piece of vein or artery is used to bypass a blockage in a coronary artery; performed to prevent myocardial infarction and relieve angina pectoris.

CAD - Coronary Artery Disease.

Cardiac - Relating to the heart.

Cardiac Catheterization - See coronary angiogram.

CAT Scanning - See computered tomography scanning.

Catheter - A tube used for gaining access to one of the body's cavities or blood vessels. In angioplasty, a catheter provides access to the heart's arteries.

Catheterization - A procedure that involves passing a tube (catheter) through blood vessels and injecting dye to detect blockages.

Cholesterol - a substance that circulates in the blood and plays a role in the formation of blockages. Cholesterol originates in foods that are rich in animal fats.

Computered Tomography Scanning - A technique for producing cross-sectional images of the body in which X-rays are passed through the body at different angles and analyzed by a computer; also called CT scanning or CAT scanning.

Coronary - Related to the arteries that supply blood to the heart.

Coronary Angiogram - A test used to diagnose CAD using the catheterization procedure. Contrast dye is injected into the coronary arteries via a catheter, and this allows the doctor to see, on a x-ray screen, the exact site where the artery is narrowed or blocked.

Coronary Arteries - The coronary arteries are special blood vessels which supply the heart with necessary oxygen and nutrients. The heart does not function properly without enough oxygen.

Coronary Artery Disease - Atherosclerosis of the coronary arteries.

CT Scanning - A procedure that uses X-rays and computers to create cross-sectional images of the body to diagnose and monitor disease.

Diabetes - A disease affecting one's metabolism of glucose (sugar) which causes changes in blood vessels. These changes may aid in the development of coronary artery disease.

EKG - Electrocardiogram. A test that measures and shows the electrical activity of the heart muscle.

Exercise Electrocardiogram - See Stress test.

Fluoroscope - Equipment used in a cardiac catheterization procedure which captures a "motion picture" x-ray image of the heart and coronary arteries.

In-stent Restenosis - A re-narrowing or blockage of an artery within a stent.

Intravascular Brachytherapy - The administration of a therapeutic dose of radiation from within a vessel to a specific area of vascular disease to prevent the reoccurrence of an obstruction or narrowing.

Ischemia - Lack of or insufficient oxygen to the tissue, in this case, to the heart muscle. Ischemia is a reversible condition if normal blood flow is restored.

Left Ventricle - The largest chamber of the heart which is responsible for pumping blood throughout the body.

Lesion - A blockage in a blood vessel. It is also known as a plaque or stenosis.

MRI - Magnetic Resonance Imaging. A diagnostic study similar to a CT or CAT scan which creates an image using electromagnetic waves instead of x-ray.

Myocardial Infarction - Commonly called a “heart attack”. Involves irreversible damage to heart tissue/muscle. Insufficient oxygen reaching the heart muscle via the coronary arteries may cause angina, heart attack (myocardial infarction), or even death to the affected area of the heart.

Percutaneous - Performed through a small opening in the skin.

Percutaneous Transluminal Coronary Angioplasty - See Angioplasty.

Plaque - The accumulated material that causes a blockage in a blood vessel. Also known as a lesion or stenosis.

Platelets - Blood cells that are involved in the formation of a clot.

PTCA - Percutaneous Transluminal Coronary Angioplasty. See Angioplasty.

Restenosis - A re-narrowing or blockage of an artery at the same site where angioplasty was previously done.

Stenosis - A narrowing of any canal, especially one of the cardiac vessels.

Stent - An expandable, slotted metal tube, inserted into a vessel. A stent acts as a scaffold to provide structural support for a vessel. A drug-*coated* stent allows for the placement of that particular drug at the stent implantation site. A drug-*eluting* stent allows for the active release of that particular drug at the stent implantation site.

Stress Test - A test that measures electrical changes in the patient’s heart (EKG) while the patient is doing controlled exercise. The stress test can show if there has been damage to the heart or if there is decreased blood flow to areas of the heart.

Thrombosis/Late Thrombosis - A blockage caused by clumping of cells. Late Thrombosis occurs after 30 days.

Transluminal - Through the inside opening of an artery.

Triglycerides - Substances in the blood that are a component of the “bad” type of cholesterol.

Vessel - Any channel for carrying a fluid, such as an artery or vein.