HEALTHY HEART

PATIENT EDUCATION MANUAL

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REFERENCES

There are many resources that will give more information on heart disease. This booklet has been compiled from all of the sources below. For more information, look on the Internet or at your local library or bookstore.

Information about Heart Disease

> American Dietetic Association
www.eatright.com

> American Heart Association
www.americanheart.org or (800) 242-8721

> Coronary Artery Bypass Grafting
http://www.cardiacsurgeryacademy.org

> McLaren Cardiac Rehab
(810) 342-2085

> Medline Plus
http://www.nlm.nih.gov/medlineplus

> Mitral Valve Repair
http://www.mitralvalverepair.org/content

> National Heart and Lung Institute
www.NHLBI.org

> Society of Thoracic Surgery Information
"What to Expect after Heart Surgery"
www.sts.org/sections/patientinformation/adultcardiacsurgery/index.html

> St. John Hospital and Medical Center, Detroit
(313) 343-3490

> Web MD
www.webmd.com

Illustrations courtesy of:

http://www.healthyheart.nhs.uk/heart_works/heart02.shtml

http://www.cts.usc.edu/hpg-heartvalvesurgery.html

http://pediatricheartspecialists.com/articles/detail/normal_coronary_arteries

http://biology-forums.com

www.learnhumananatomyandphysiology.com

http://en.wikipedia.org

http://www.nlm.nih.gov/medlineplus/ency/images/ency/fullsize/19566.jpg

"Going for Heart Surgery" Pritchett & Hull Associates Inc. 2006

RESOURCES

There are many additional resources available to help the patient and family members to manage their heart disease.

Diet/Nutrition

> National Heart, Lung and Blood Institute Information Center
- diet. www.nhlbi.nih.gov

> American Dietetic Association (800-366-1655) or www.eatright.org

> Heart Healthy home delivered meals (888-632-5721)

> Heart Healthy Toll-free Hotline (800-575-WELL)

> USDA: www.nutrition.gov

> American Heart Association: www.deliciousdecision.org

Quit Smoking

> American Lung Association (800-678-5864) or www.alam.org

> You Can Quit Smoking (800-358-9295)

> Smokers Quit Kit (800-537-5666)

> Quit Smart (888-73-SMART)

Stress/Depression

> SAMHA's (Substance Abuse and Mental Health Services Administration) Center for Substance Abuse Treatment (800-662-HELP) or www.mentalhealth.org

Common Names

> Amlodipine (Norvasc)
> Diltilazem (Cardizem)
> Felodipine (Plendil)
> Isradipine (DynaCirc)
> Nifedipine (Adalat/Procardia)
> Verapamil (Calan)

CHOLESTEROL LOWERING MEDICINE

Depending on the doctor and lab results, they may want to prescribe medicine to lower blood cholesterol. Along with medication, there are other ways to lower the blood cholesterol numbers. If the following tips are followed, the chance of getting rid of prescribed medications can occur.

Common Cholesterol Medications

> Statins: slow down the production of cholesterol and increase the liver's ability to removed LDL (bad) cholesterol already in the blood. Examples include: Lipitor, Crestor, Zocor, and Pravastatin.
> Fibrates: Lower cholesterol and increase HDL (good) cholesterol. Examples include: Tricor or Gemfibrozil.
> Cholesterol Absorption: Inhibitors help block the absorption that comes from food. Examples: Zetia.

NITRATES

Nitrates are medications that help dilate blood vessels. They are used to prevent chest pain (angina) and reduce the extra strain or pressure on the heart.

Fast-acting nitrates (Nitrostat) will work immediately if a problem occurs. There are also long acting nitrates that the doctor may prescribe (Imdur). These will prevent chest pain from occurring and can be taken on a daily basis.

It is very important to take any medicine exactly as prescribed by the doctor. The nitrate will work best when taken the proper way and at the proper time each day. If the chest pain continues to worsen or is not relieved by the prescribed nitrate notify the doctor

ANTICOAGULANTS

Warfarin (Coumadin)

This medication is used as a blood thinner or anticoagulant. This medication is very important in the prevention of blood clots and reducing the risk of heart attack or stroke. This medication is normally prescribed to patients after having a valve replacement or repair, or who have an irregular heart beat or arrhythmia (Atrial Fibrillation). While taking this medication, frequent blood tests will be completed to make sure blood levels are within normal limits. In some cases the dosage may have to be adjusted based on blood test results. Patients who have a mechanical heart valve can expect to be on some form of this medication for the rest of their lives.

This medication should be taken at the same time each day. This medication should also be taken exactly as prescribed by the doctor. If a dose was missed, take it as soon as remembered on the same day. Do not double any dose to catch up!

There are certain drug interactions that occur while taking Warfarin or Coumadin. Amiodarone, some antibiotics and supplements that contain Vitamin K interact differently with Warfarin or Coumadin. Certain foods may cause an interaction with Coumadin or Warfarin. Vitamin K can reduce the effectiveness of Warfarin. Vitamin K is contained in high amounts in green, leafy vegetables. Changes in day to day consumption can drastically change the effectiveness of this medication. It is important to keep the diet consistent and alcohol should always be avoided.

Rivaroxaban (Xarelto), Dabigatran (Pradaxa) and Apixaban (Eliquis)

These medications are used as a blood thinner or anticoagulant. These may be prescribed by the doctor instead of Warfarin. While taking one of these medications, the doctor may periodically monitor the patient's kidney function with simple blood tests.

With anticoagulants such as Warfarn, Rivaroxaban, Dabigatran and Apixaban unusual bleeding may occur. Symptoms of bleeding include: unusual bruising, bleeding gums, bloody or coffee ground-like vomit, coughing up blood, dark tarry stools, cuts that won't heal and nose bleeds. Contact your doctor if you experience any of the above symptoms while taking these meditations. If urgent, proceed to the nearest emergency room.

It is always important to let the healthcare professionals know that the patient is taking this medication. To avoid any of the above mentioned drug interactions, make sure to discuss any over-the-counter medications with the doctor or pharmacist.

HEART SURGERY

OTHER IMPORTANT INFORMATION

13. CARDIAC MEDICATIONS

There are many different medications that can be prescribed by the doctor after surgery. Medications are prescribed to decrease the workload placed on the heart so it can begin to heal. Medications also help relieve symptoms, prevent hospitalizations and decrease the risk for having future heart problems. Some of these medications have even been proven to increase lifespan and overall quality of life. It may take time for the doctor to get the medications regulated properly. Every patient is unique, as everyone has different reactions to each medication. During the follow-up appointments, and based on the exercise sessions in cardiac rehab, the doctor will find what medicines and dosages work best. If the doctor does decide to change any medications this does not mean that the condition is getting worse, the doctor just wants to make sure that the patient is taking the correct and most appropriate medications. Remember NEVER STOP or START taking any medications without the doctor's permission.

IMPORTANT FACTS ABOUT YOUR MEDICATIONS

SPECIFIC MEDICATION INFORMATION

There are many different groups of medications on the market. All of these medications have different actions and side effects. Here are some of the medicines that are used to treat patients after heart surgery or patients with general heart problems.

ACE Inhibitors

The main indication of this medication is to lower blood pressure and strengthen the heart for patients with congestive heart failure, coronary artery disease or after having a heart attack. It can also be used to treat some kidney disease.

Angiotensin Receptor Blockers (ARB's)

ARB's can be used alone or with some other medications in order to help lower your blood pressure. They also help strengthen the heart for patients with heart failure. They may be prescribed for people who are unable to take ACE Inhibitors.

Antiarrhythmic Medications

An arrhythmia is an abnormal heart rate or rhythm. Examples of this include atrial fibrillation, atrial flutter, ventricular fibrillation or ventricular tachycardia. There are a variety of cardiac medications that treat arrhythmias. The goal of antiarrhythmic therapy is to maintain a normal heart rhythm.

Antiplatelet and MI

This type of medication is used to prevent blood from becoming sticky. These medications help prevent against blood clots. Blood clots can ultimately block the arteries that carry oxygen rich blood to the heart or brain, causing a heart attack, chest pain or a stroke. Aspirin is an Antiplatelet medication prescribed for daily use in patients with heart disease. It is important to take aspirin with food or milk to prevent stomach upset.

If an intervention occurred, such as an angioplasty or stent, the doctor most likely will prescribe Plavix, Effient or Brillinta. These medications are used to prevent blood clots and stroke and to help keep your stents open to allow adequate blood flow.

Common Names

> Clopidogrel (Plavix)
> Prasugrel (Effient)
> Ticagrelor (Brilinta)

Beta Blockers

Beta Blockers are considered to be life saving medications. They decrease the risk of death after having a heart problem. Beta Blockers may be used to lower blood pressure, treat irregular heart rhythms, prevent chest pain and prevent future heart problems. They are also used to treat heart failure in patients who do not have symptoms (such as fluid retention or trouble breathing).

Remember: Never stop a medication without talking to the doctor first. Suddenly stopping a beta-blocker may worsen chest pain, quickly raise blood pressure and even cause heart rhythm irregularities. Stopping this medication suddenly can further increase the risk of having a heart attack.

Calcium Channel Blockers

Calcium Channel Blockers are used to lower blood pressure, prevent chest pain and chest pressure (angina). Some are used to treat irregular heartbeats.

> Drink a full glass of water after being seated.
> Take advantage of the low fat appetizers.
> Ask for a nutritional fact sheet.
> Request all salad dressings or sauces to be served on the side.
> Choose broth based soups instead of creamed varieties, although all soups are usually high in sodium.
> Limit your alcohol intake. Alcohol can add a lot of empty calories and can stimulate the appetite.
> Ask for steamed veggies; make sure they are seasoned without butter or salt.
> Baked turkey, chicken or fish are always safe and healthy options.
> Eat slow, chewing the food well. Stop eating when beginning to feel full. Ask the waiter for a to-go container to take the rest of the food home.
> Healthy choices for dessert can be hard to find at a restaurant, but they do exist. If a dessert is needed to satisfy the sweet tooth, share one. By doing so only half the calories will be consumed, but the satisfaction of having a dessert occurs.

Avoid These Choices

> Foods prepared with these sauces; béarnaise, alfredo, hollandaise or lemon butter.
> Foods served with gravies.
> Potatoes prepared; au-gratin, scalloped or in cream/cheese sauce.
> Foods that are fried (pan, deep, or sautéed) or braised.

Try to Limit These High Sodium Food Preparations

> Pickled, smoked or barbequed.
> Soy, teriyaki and cocktail sauces.

Choose These Healthier Preparations

> Steamed, baked, broiled, roasted, poached, char grilled, or dry grilled (with lemon juice and wine.

NOTE: Ask the nurse for a copy of McLaren's Nutrition Booklet! This will provide the patient with good information regarding the Heart-Healthy Diet.

If there are more diet questions, please refer to the McLaren "Heart Healthy Nutrition Guide and Cookbook or call (810) 342-2185.

may decrease the risk of heart disease. Fish oil supplements have been shown to be beneficial in preventing heart disease. Women who are pregnant or breastfeeding and children should talk with their healthcare provider regarding the current recommendations for safe fish consumption. Another safe source of omega 3-fatty acids is flax seed.

Recommendations on Avoiding Fat

- Fats are the most calorie dense food. Even heart healthy fats can be fattening and damaging to overall health. If on a diet and counting calories, limit the amount of fat that is eaten.
- Avoid ingredients that list “hydrogenated” or “partially hydrogenated” oils.
- French fries, doughnuts, cookies and crackers contain large amounts of trans-fatty acids. Avoid these as much as possible.
- Avoid fried foods and commercial baked goods. These foods can be very high in total and trans-fats.
- Choose fats and oils that have 2 grams or less saturated fat per tablespoon.
- Olives and avocados are high in monounsaturated fats. These are the good fats but those foods are also high in calorie content. Use them sparingly.
- Nuts and seeds contain mostly polyunsaturated or monounsaturated fats (the good fats) and no cholesterol. These too can be high in total fat and calories.
- Corn, safflower, sesame, soybean and sunflower oils are polyunsaturated fats. They are good to use in limited amounts for cooking or dressings.

SALT

Our bodies need salt/sodium in order to survive. When we have too much salt in our bodies problems begin to arise. Salt helps retain fluid which can ultimately lead to congestive heart failure. Too much salt can cause an increase in blood pressure as well.

Tips for Cutting Salt Intake

A lot of people have too much salt in their diets. Some people put salt on their food at the table before they even taste it. It is just programmed in us to grab the salt shaker at every meal. The heart works harder when too much salt is part of the daily diet of people. A low salt (sodium) diet is considered to be a heart healthy diet. Following are tips to cut salt intake:

- Avoid adding salt during cooking or when sitting down at the table.
- Choose fresh, frozen or “No Salt Added” canned vegetables.
- Choose low sodium or “Heart Healthy” soups.
- If regular canned foods cannot be avoided make sure to drain and rinse before cooking. Cook in fresh water.
- Use low-sodium versions of condiments such as mustard, ketchup, worcestershire sauce, soy sauce, barbeque sauce, chili sauce or steak sauce.
- Use onion powder, garlic powder or an herb-seasoning (Mrs. Dash) instead of onion salt, garlic salt or seasoning salt. It is also important to note the “No Salt”, “Sea Salt” or any other salt substitutes still contain sodium.
- Season foods with fresh garlic, onion, lemon juice, vinegar, herbs and spices.
- Marinate meat, poultry and fish in fruit juice, flavored vinegar and seasonings before cooking.
- Avoid preserved foods such as; bacon, lunch/deli meats, hot dogs, sausage, cheese, pickles, olives, relish and sauerkraut.
- Avoid “processed” foods such as; frozen dinners, pre-packaged or boxed rice, potatoes, stuffing, pasta, dried soup or gravy mixes. Some cereals can also be high in sodium. Make sure to read food labels for sodium content per serving.
- Select snack foods that are unsalted varieties of chips, pretzels, crackers, popcorn and nuts.
- Read package labels for salt or sodium additives. If the label reads “sodium” or “soda”, use sparingly.
- Eat out less. When eating at home try to concentrate on fresh ingredients instead of using something that comes in a box.
- When eating out at a restaurant ask for the food to be prepared without salt. Request that all of dressings or sauces be served on the side. Try to use as little as possible.

DINING OUT SUGGESTIONS

When eating out at a restaurant, there is no knowing how the food is prepared. Make sure to ask questions. Everyone has every right to know what they will be eating. It is important to plan ahead. Below are some tips to follow for a successful meal out.

- Avoid “all-you-can-eat” or buffet style restaurants.
- Eat a small snack before leaving the house.
- Look ahead at the restaurant’s menu and do some research to see what the best choices available are.

12. NUTRITION

Heart Healthy Nutrition: The diet is half the battle!

Nutrition is an important part of the heart healthy lifestyle. This section will give tips on how to transition to a heart healthy diet. Everyone can benefit from a heart healthy diet. This is going to be part of a patient's lifestyle change once discharged from the hospital and after having a heart problem.

MAKE A CHANGE

> Aim to be at a healthy weight for body size and structure.
> Increase activity level on a daily basis or stay active.

START HEALTHY HABITS

> Eat 5-6 small meals per day.
> Do not skip meals.
> Eat a variety of whole grains. Have 6-8 servings of whole grain bread, cereal, brown rice or pasta per day.
> Eat a variety of fresh fruits and vegetables daily. Aim for five servings per day.
> Eat fish 2-3 times per week in order to get a healthy dose of omega fish oils.
> Limit intake of red meat.
> Eat more lean meats such as chicken or turkey.
> Have two cups of low fat dairy products (milk, cheese, yogurt or cottage cheese) per day.
> Stock the refrigerator with "safe foods" to eat. Avoid buying unhealthy snacks at the store.
> Choose and prepare foods that are low in saturated fat and cholesterol and moderate in total fat.
> Choose beverages and foods low in sugar.
> Choose and prepare foods with less salt (sodium).
> Limit alcoholic beverages to 1-2 drinks per day.

NOTE: While in the hospital ask to speak with one of the dieticians. They can give the patient more specific guidelines to fit their dietary needs.

KNOW YOUR FATS

The major fats in the foods we eat are; saturated, polyunsaturated, monounsaturated, trans-fats, and omega 3-fatty acids. Each type of fat reacts differently and affects the body in different ways.

Saturated Fats

These fats are usually solid at room temperature. The main source of saturated fats in diets comes from animal products such as meat, poultry, butter and whole milk. These fats increase total and LDL (bad) cholesterol levels. These fats have also been linked to causing heart disease and cancer.

Polyunsaturated Fats

These fats are liquid at room temperature and found in the refrigerator. They are found in vegetable oils such as; safflowers, sesame, soy, corn and sunflower seed. Some nuts and seeds also contain polyunsaturated fats. These fats tend to lower Total and LDL (bad) cholesterol levels; however, they can also lower HDL (good) cholesterol levels.

Monounsaturated Fats

These fats are liquid at room temperature but start to solidify at refrigerator temperature. Examples are; olive, canola and peanut oils. Avocados and walnuts also contain monounsaturated fats. These fats can help lower cholesterol levels as long as saturated fats are limited at the same time. Monounsaturated fats lower Total and LDL (bad) cholesterol levels, but keep HDL (good) cholesterol from decreasing.

Trans Fatty Acids/Hydrogenated Fats

Hydrogenation is a chemical process that makes an oil (liquid) change into a solid form. An example would be when vegetable oil is turned into margarine. Hydrogenation can also give some foods a longer shelf life. Unfortunately, trans-fatty acids result from the hydrogenation process. Trans-fat can raise both Total and LDL (bad) cholesterol levels. It also lowers HDL (good) cholesterol levels. Many products in the grocery store contain hydrogenated or partially hydrogenated vegetable oils. That is why it is so important to check foods labels before buying something that could lead to heart problems in the future. While looking at the labels, any food product that has "hydrogenated" or "partially hydrogenated" on it, leave them at the store.

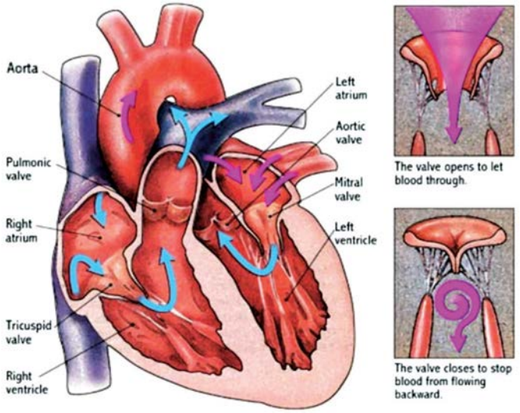
Omega 3-Fatty Acids

The best source of this kind of fat is found in cold water fish. Studies have shown that eating fish containing omega-3 fatty acids such as salmon, tuna, haddock, mackerel, sea trout and herring

1. UNDERSTANDING YOUR HEART

HOW THE HEART WORKS

The cardiovascular system is made up of the heart, arteries, and veins. The heart works like a pump and is about twice the size of a fist. A heart can move 4300 gallons of liquid through 62,000 miles of very narrow hose in about 24 hours. It pumps 150,000 times each day; so during a 70-year period, the heart pumps about 3,832,500,000 times. This pump works 100% of the time without a break; it does not take time off for routine maintenance. The heart, however, is like anything else in the body. If it is well taken care of and maintained with a healthy lifestyle it will be stronger and last longer. Being educated about how the heart works and the proper way to take care of it is the best way to prevent heart problems or disease in the future.

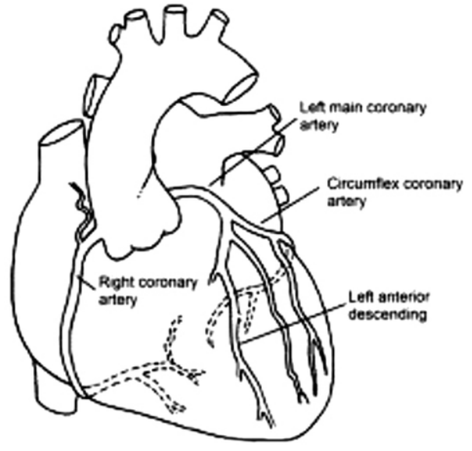


http://www.cts.usc.edu/hpg-heartvalvesurgery.html

Heart valves are very important in order for our arteries and veins to do their jobs. Arteries are responsible for carrying oxygen and nutrient rich blood to the rest of the body. Veins are used to carry blood with high CO2 concentration and low oxygen from the body tissues back to the heart. The cycle of moving blood never stops.

Coronary Arteries

These arteries supply the heart with blood flow. It is important to understand how these arteries work in order to prevent problems in the future. The right and left coronary arteries branch off the aorta which then divide into smaller arteries that supply all the areas of the heart with oxygenated blood. In order for the heart to remain healthy it must be supplied with blood containing oxygen at all times. Normal healthy coronary arteries are open and allow the blood to flow through with little resistance. When there is a blockage in one of these arteries, blood flow is



http://pediatricheartspecialists.com/articles/detail/normal_coronary_arteries

reduced which can eventually be blocked completely causing damage to the heart. This type of damage cannot be repaired. Think of the Coronary arteries as a garden hose to the heart. When watering flowers a constant strong flow of water is needed in order to keep the flowers alive. Over time, without the proper maintenance, the garden hose will become clogged. Once clogged, water will not be able to flow properly to keep the flowers alive. Hence the reason why it is so important to maintain the coronary arteries so they continue to work properly.

2. CARDIAC RISK FACTORS

Research has shown a number of different factors can lead to heart disease. These have been named cardiac risk factors. Many of these risk factors can be controlled. There are a small number of risk factors that cannot be controlled or managed. It is important to know the difference between these risk factors to reduce the likelihood of cardiac disease or damage.

Risk Factors which can be controlled

> Smoking
> High Blood Pressure (Hypertension)
> Over Weight (Obesity)
> High Blood Cholesterol (Hyperlipidemia)
> High Blood Sugar (Diabetes)
> Unhealthy Diet
> Lack of Physical Exercise (Sedentary Lifestyle)
> Stress
> Alcohol/Drug Abuse

Risk Factors which cannot be controlled

> Family History
> Ages
> Male Gender
> Female Gender (After Menopause)

It is important to learn about these risk factors in order to maintain a healthy lifestyle and prevent further cardiac complications in the future.

RISK FACTORS WHICH CAN BE CONTROLLED

Smoking

While the number of cigarette smokers has decreased to about 27% of all men and women, the health impact of smoking continues to be the greatest cause of death and disease in the United States. This habit creates a very serious health risk and influences many serious diseases. Nicotine and other chemicals in tobacco increase the risk of heart disease. Smokers have twice as many heart attacks as non-smokers. Smokers also have a greater risk of having a stroke. Smoking can also cause cancer, emphysema, and other lung problems.

Smoking damages the inner lining of the blood vessels. Nicotine can cause the narrowing or constrictions of blood vessels that can lead to high blood pressure.

Smoking can also cause the blood to thicken causing clots to form and cholesterol plaques to develop in your blood vessels. As cholesterol levels increase, chances of developing heart disease also develop.

Smoking also can lower the good cholesterol (HDL) in the blood. The more cigarettes smoked, the more the HDL levels will be affected. Smoking affects women's HDL levels more than men.

There is nothing easy about quitting smoking. But as hard as quitting may be, the results are well worth it. In the first year after quitting smoking, the risk of heart disease drops sharply and then gradually returns to "normal" or equal to someone who has never smoked.

Keys to Quitting Smoking

> Decide now to quit. Set a date to quit and stick with it! Make an internal promise to yourself!
> Review all efforts to quit in the past. Make a list of everything that prevented you from succeeding: emotions, stress, work or lack of support from loved ones. Then write down ways to combat these problems.
> Get support and encouragement from your family and friends. Join a smoking cessation support group or class.
> Clean out your car and your house. Vacuum and wash the windows. Have your clothes cleaned. Have the interior of your car cleaned thoroughly and remove the ashtray and cigarette lighter. Do not allow others to smoke in your car, house, office, or elsewhere.
> Identify situations that make you want to smoke: people, places, times and etc. Avoid these situations.
> Make a conscious effort to spend time with people who do not smoke.
> Change your habits. For example, change your morning routine and incorporate something new.
> Create a cigarette "money jar." Each day put the money you saved from not smoking in the jar. Watch the dollars accumulate and use the money to treat yourself to something new.
> Try deep breathing: inhale slowly and deeply through your mouth. Purse your lips and exhale slowly, gently, and fully. Do this four times in a row and talk to yourself mentally about how important it is to have good health and not smoke.
> Substitute carrots, celery sticks, sugarless gum and

CARDIAC REHABILITATION FACILITIES

McLaren Flint
401 S. Ballenger Hwy.
Flint, MI 48532
(810) 342-2085

McLaren Bay Region
3190 E. Midland Rd.
Bay City, MI 48706
(989) 667-6640

McLaren Central Michigan
1221 South Dr.
Mt. Pleasant, MI 48858
(989) 772-6700

McLaren Lapeer Region
1375 N. Main St.
Lapeer, MI 48446
(810) 667-5500

McLaren Northern Michigan
416 Cannable Ave.
Petoskey, MI 49770
(231) 487-4244

Alpena General Hospital
1501 Chisholm Ave.
Alpena, MI 49707
(989) 356-7390

Cheboygan Community Hospital
748 S. Main St. P.O. Box 419
Cheboygan, MI 49721
(231) 627-5601

Covenant Health Care
5400 Mackinaw Rd.
Saginaw, MI 48604
(989) 583-5030

Gratiot Community Hospital
300 S. Warwick Dr.
Alma, MI 48801
(989) 463-1101

K.M.H.C.
419 S. Coral St.
Kalkaska, MI 49646
(231) 258-7500

Memorial Health Care Center
826 W. King St.
Owosso, MI 48867
(989) 723-5211

Mercy Hospital
1100 Michigan Ave.
Grayling, MI 49738
(989) 348-5461

Mid-Michigan Medical Center
4005 S. Orchard Dr.
Midland, MI 48670
(989) 839-3000

Munson Medical Center
1221 Sixth St.
Traverse City, MI 49648
(231) 935-5000

Standish Community Hospital
805 W. Cedar
Standish, MI 48658
(989) 846-3415

West Branch Regional
2463 S. M-30
West Branch, MI 48661
(989) 343-3210

> Patient name.
> Patient phone number.
> Diagnosis.
> Restrictions/Parameters/Target heart rates.
> Permission for Phase II/IV cardiac rehab.
> Doctor's signature.

HOW TO MONITOR YOUR PULSE RATE AT HOME

To measure how hard a patient is working with a particular exercise, the easiest and simplest way is to monitor the heart rate. The heart rate measurement gives an indication if the exercise can be done faster/quicker or if it needs to be slowed down. The heart rate is also a good indicator on how well the heart is working. Exercise is going to make the heart stronger. Exercise can also make the heart a more efficient pump. Once the heart becomes more efficient, it does not need to pump as hard or as much, taking the extra workload off the heart.

How to count a heart rate

> Taking your pulse is the same as counting the number of times your heart beats per minute.
> On average a resting heart rate should be between 60-99 beats per minute (bpm).
> The best location to take the pulse is at the wrist, just below the base of the thumb on the thumb side. To take the pulse, the index and middle finger of the opposite hand should be used. Feel for the pulsations and count how many times the heart beats in one minute.
> When taking the pulse during and after exercise, count the number of pulses for a 15-second period and multiply that number by four or count the number of pulses for a 10 second period and multiply by six. This will give a one minute reading.
> During the recovery period, after exercise, a heart rate should not be higher than 120 beats per minute or increase while resting.
> As always, with any symptoms during exercise, if the heart beat is irregular, let the doctor or specialist know.

HEART RATE CONVERSION CHART

NOTE: Remember during exercise count the pulse for 10 seconds and multiply by six or 15 seconds and multiply by four. This number will be the number of times the heart beats in a minute.

Rate counted for 10 sec.	x 6 =	Beats per min.
9		54
10		60
11		66
12		72
13		78
14		84
15		90
16		96
17		102
18		108
19		114
20		120
21		126
22		132
23		138
24		144
25		150

mints when there is an urge to smoke. Keep your hands busy during the day.
> If you need assistance, consult your physician about using a medication that will work best for you. Nicotine gum and patches are available without a prescription. You can also ask your doctor about medications that can help reduce the urge to smoke.
> Be prepared for relapse during difficult situations. Avoid alcohol. Be careful around other smokers. Eat a healthy diet and stay active. Find other ways to improve your mood other than smoking.

High Blood Pressure (Hypertension)

High blood pressure is often called the "Silent Killer" because it usually does not have any symptoms. With high blood pressure, the heart has to pump harder because of the increased pressure being placed on it. Over time the extra workload that is being placed on the heart can cause the heart to increase in size and ultimately weaken the heart muscle. Over sixty million Americans have hypertension; of these, approximately one-third do not know they are hypertensive.

These are several lifestyle factors that can lead to an increase in blood pressure

> Excessive Alcohol Intake
> High Salt Intake
> Excessive Body Weight
> High Levels of Emotional Stress
> Smoking

High blood pressure has several negative effects on the heart and coronary arteries. The constant high pressure and increased tension in the artery walls damages the inner lining of the arteries and helps develop plaque that can increase the risk of having a heart attack or stroke.

Blood pressure is measured with an inflatable cuff and a stethoscope by listening to the sound of blood flowing through the arteries. Two numbers indicate a blood pressure. The first number represents the highest pressure when the blood vessels are contracting. The second number is the lowest pressure in the vessels when the heart is relaxed. A normal blood pressure is considered to be 120/70 mmHg.

The recommended treatments for high blood pressure are:

> Eat less sodium and salt.
> Exercise on a regular basis.
> Learn to practice stress-reducing techniques.
> Lose weight if you are overweight.
> Stop smoking.
> Take medications as prescribed by your doctor.

Obesity

Obesity has become an epidemic in this country. When overweight, the heart muscles have to work harder to pump the blood. Being overweight places stress, not only on the heart, but on the entire body.

The major health risks for being overweight include:

> Diabetes
> Diminished Life Expectancy
> Gallbladder Disease
> High Blood Pressure
> Orthopedic Problems
> High Cholesterol and Triglycerides
> Psychological Stress
> Sleep Disorders and Depression
> Some Types of Cancer

The keys to permanent and successful weight control are to recognize and modify any eating habits and to exercise regularly. What is eaten, as well as why it is eaten contribute to weight gain. There is no such thing as a "quick fix" when it comes to weight loss.

Lack of Exercise:

The body is meant to be moving and it works the best when it is active. The heart is a muscle; thus needs the proper amount of activity and rest to keep it in good working condition. Regular exercise can help control several risk factors associated with heart disease; obesity, high cholesterol, stress, high blood pressure and diabetes. People who do not exercise are twice as likely to develop heart disease when compared to people who participate in a regular exercise regimen.

High Cholesterol

Cholesterol is a soft, fatty substance, found in the cells throughout the body. Cholesterol is helpful in maintaining certain hormones and other tissues needed throughout the body. However, too much cholesterol in the body can ultimately be a problem. There are two types of cholesterols that are involved with heart disease.

1. Low Density Lipoproteins (LDL)- Otherwise known as the bad cholesterol. LDL is the major cholesterol carrier in the blood stream. When your LDL number

is high, cholesterol can build up in the walls of the arteries. This can form plaque that can clog arteries and cause blockages. If a blockage is formed this can cause blood flow to the heart to be restricted causing a heart attack or stroke.

2. High Density Lipoprotein (HDL)- Otherwise knows as the good cholesterol. About one third to one fourth of blood cholesterol is carried by HDL. Most of our HDL is made by the liver. This good cholesterol is thought to carry harmful cholesterol away from the arteries and back to the liver where it can be passed out of the body. A good way to maintain a high HDL is through a regular exercise regimen.

Triglyceride

Triglyceride is the major form of fat found in nature and in the foods that are eaten. Triglycerides are made and broken down in the liver. A low triglyceride level helps reduce the amount of LDL (bad cholesterol) being made by the liver.

Know Your Numbers

Cholesterol levels are measured by testing your blood. Food should not be consumed for 12 to 14 hours before the blood test. The chart below shows the proper levels of cholesterol for people with evidence of coronary artery disease and/or diabetic:

Cholesterol levels can be controlled by:

1. Proper nutrition
2. Exercise: A regular exercise regimen will help lose weight, lower the LDL, raise the HDL and lower blood pressure.
3. Medication: Prescription medication can help lower cholesterol.
4. Quit Smoking.

High Blood Sugar (Diabetes):

Uncontrolled blood sugar levels are a serious risk factor for heart disease. People with diabetes are at risk for developing “hardening of the arteries” (atherosclerosis) at an earlier age than those without diabetes. This, in turn, increases the chance of heart disease, stroke, kidney disease and loss of vision. When people have diabetes, platelets (cells in the blood) tend to become sticky and can add to the plaque. When this happens, the blood vessels become even narrower which can put that individual at a higher risk for having a heart attack or stroke. Good blood sugar control decreases the stickiness of the platelets and can decrease this dangerous risk factor. People with diabetes may not have the “classic” signs of a heart attack such as chest pain. Instead, other symptoms may include nausea, shortness of breath, sweating and in some instances, vomiting.

Diabetes can be managed with exercise, diet and medications. Here are some tips to help manage your diabetes:

> Exercise daily for 45-60 minutes. Cardiovascular activities like walking can increase the ability of the cells to use insulin properly, decrease insulin resistance and lower blood sugar levels.
> Maintain a heart-healthy balanced diet.
> Manage your weight. This can help the body use insulin properly.
> Check blood sugar levels regularly. The fasting

	Desirable Levels	How Can I Improve My Levels
Total Cholesterol	Below 150 Exercise and weight loss. Medication	Diet low in saturated fat.
LDL (Bad Cholesterol)	Below 70 Exercise and weight loss. Medication	Diet low in saturated fat.
HDL (Good Cholesterol)	Above 40 (men) Above 50 (women) Limit alcohol No smoking.	Diet low in saturated fat. Exercise and weight loss.
Triglyceride	Less than 150 Exercise and weight loss. Fish Oil	Decrease sugars and alcohol in diet.

or cardiac rehab team if there is any discomfort in the chest, shortness of breath, dizziness or if the patient becomes too tired that daily activities are impossible.

Phase II (Outpatient) Cardiac Rehab

Phase II Cardiac Rehab is considered outpatient, where the patient is scheduled for an appointment. This phase of cardiac rehab is after the physician has cleared the patient to start exercising more vigorously, but under medical personnel supervision.

> Outpatient Cardiac Rehab is located on the first floor in the North building of the hospital.
> A doctor will write a prescription for the patient to start attending cardiac rehab. Normally the prescription is for three times per week for 36 visits. Each visit should last approximately an hour. The length of treatment is dependent on the patient’s insurance coverage.
> The first visit/session of Cardiac Rehab will consist of an assessment that evaluates the patient’s health history, goals and any progress that has been made since being discharged from the hospital. During this assessment, the patient’s heart will be monitored while performing a special walk test. This test measures the patient’s initial and current level of activity.
> During each subsequent visit, the patient will wear a heart monitor each session while exercising to evaluate the patient’s heart EKG. By monitoring the EKG, the specialists will have direct feedback on whether the heart is working properly, that the procedure is working as expected and if the medications are helping.
> During each visit, the patient will exercise on numerous types of cardiovascular machines to increase the heart rate to help the heart heal. Different types of cardiovascular equipment include: treadmill, stair stepper, recumbent bike and arm ergometer.
> Every 30 days of treatment, a report will be sent to the prescribing doctor that details the patient’s progress and updates and if there are any problems while exercising.
> Along with the exercise sessions, there are free education classes offered to the patients and their families. There are different classes offered throughout the month. Classes include: medication management, diet and nutrition, stress management and risk factor management. These classes are announced on the white board located in the Cardiac Rehab gym. More information will be given as the classes are offered. All classes are taught by specialists.

Specifics for Phase II Cardiac Rehab

> Exercise sessions are normally held on Monday, Wednesday and Friday for 6-12 weeks based on insurance coverage. Tuesday and Thursday exercise sessions are available if needed.
> Each class will provide 30-40 minutes of cardiovascular exercise.
> The patient will be scheduled for the same time slot for all sessions of Cardiac Rehab.
> At each session, the patient will be asked about their pain and if there are any problems with exercise.
> If problems exist that need to be addressed, one of the specialists will contact the patient’s doctor.
> Let the specialists know if there is any change in medication (type, dosage and/or frequency) or condition while attending Cardiac Rehab.

Phase III

This option will be discussed with you by cardiac rehab staff at the appropriate time.

Phase IV (Maintenance) Cardiac Rehab

After being discharged from Phase II, the patient progresses to Phase IV or the maintenance program. During this phase, the patient does not wear a heart monitor. Also, this phase is not normally paid for by insurance, thus the patient will be responsible for the $35 per month fee. During this phase, the patient will continue to receive a monthly EKG check and have their vital signs monitored with each visit. While enrolled in this program, the patient can come up to five days per week, at a time that fits their schedule the best. There are not scheduled visits during this phase, so the patient has the freedom and flexibility in working with their schedule. The exercise program will still be monitored and adjusted as needed by the specialists, but is not as strict as the Phase II program. This program offers patients a safe place to gain their strength back and understand what activities they are able to do at home when they are not under direct supervision.

What is required from the doctor for the patient to attend Cardiac Rehab

> Prescription for Cardiac Rehab that details the amount and frequency of treatment.

After leaving the hospital, it is really important to maintain a regular exercise regimen at home. Continued exercise is a critical part of the recovery process. Exercise improves blood circulation to the heart and other muscles of the body. A home exercise routine will help increase any activity level safely before beginning an outpatient (Phase II and IV) Cardiac Rehab program.

Exercise Tips

Below are exercise tips to help getting started at home.

- Limit initial exercise to progressive walking or use of a stationary bike.
- Wait one hour after meals before exercising.
- Stretching before exercising can reduce a risk of injury. Each stretch should be held 8-15 seconds and should not be painful. Make sure not to do any stretches that put pressure on the incision in the chest. Also go slowly and remember to breathe while stretching.
- Gradually increase the activity: stay close to home the first week. Divide walking into four separate short walks throughout the day. Take your time. Several short walks with rest between each one are better than one long exhausting walk. Progressing through the first four weeks of recovery, increase the distance walked and decrease the frequency. Plan the day's activities to avoid being over tired. Also, remember there is a lifting restriction of 5-8 pounds for the first 2-3 months.
- Exercise on a regular basis: It is important to have a regular exercise regimen that the patient will continue with. In the first four weeks after going home the patient should walk every day. The goal for this is to complete 30 minutes of exercise for five days per week. Walk for different intervals. Start out with 5-10 minutes while monitoring all symptoms after each session. Each day the patient should continue to feel stronger and able to do longer periods of exercise. This will ultimately improve blood circulation and help the healing process.
- Remember to maintain proper posture and technique when beginning a regular exercise regimen.
- Always wear comfortable clothing and proper athletic shoes. This will allow the joints and muscles to tolerate the exercise better and for longer periods of time.
- Always warm up before exercising. A warm-up period gradually increases the heart rate and blood pressure. This is important to prepare the body for the exercise. To warm up, walk slowly for five minutes to warm up the muscles. This is very helpful in preventing injury.
- Cool down after walking or exercising. This will gradually bring the heart rate and blood pressure back to normal. This will help to decrease the workload on the heart.
- Avoid walking outdoors when it is colder than 40 degrees, windy or very hot and humid. These weather conditions can cause extra pressure and strain on the heart. Using a shopping mall, school, or other large public buildings for walking during bad weather will allow exercising without compromising health.
- Walk with a partner. Walking with someone has many benefits. One benefit is that each person will be accountable to someone else to exercise, thus you will be more likely to exercise regularly or more often. Another benefit is that it is safer to walk with someone, especially after having surgery. If walking alone, always carry a cell phone in case of an emergency.
- Always be aware of the surroundings. This is important for comfort and safety issues, but also helps to prevent against any falls due to unfamiliar terrain.
- Do not exercise while sick. Exercise can make the illness worse. When sick just rest and heal.

Sit down and rest if any of the following symptoms exist:

- Shortness of breath.
- Weakness, dizziness, light-headedness.
- Extreme sweating that is not normal with exercise.
- Extremely fast or irregular heartbeat (during cardiac rehab, the patient will learn how to take their pulse, which is also described on pg. 61 of this booklet).
- Sudden nausea, discomfort or pain in the jaw, teeth, neck, chest, shoulder, arms, hands or shoulder blades.

Remember

- If unable to talk while exercising without getting short of breath, the exercise intensity or frequency is too hard.
- If able to sing while exercising, the exercise intensity or frequency can be increased.
- Listen to what the body is advising! Stop exercising immediately and follow the directions of the doctor

blood sugar should be 90-130 mg/dl.
- Have a Hemoglobin A1c (HbA1c) test done to make sure the diabetes is under control. The goal for this is to be below 6.5%.
- Take medicine as prescribed by your doctor.
- Take part in a diabetes education class.

Metabolic Syndrome

A recent study has found that at least 47 million Americans have this condition and are at an increased risk for cardiovascular disease and do not even know it. It consists of having three or more of the following:

- Fasting blood glucose greater than 100mg/dl
- Serum Triglycerides greater than 150mg/dl.
- Serum HDL cholesterol less than 40mg/dl.
- Blood Pressure greater than 130/85mmHG.
- Waist girth greater than 102cm (40 inches) in men or greater than 94cm (37 inches) in women.

Proper nutrition and exercise helps prevent hypertension, raised glucose and high cholesterol levels associated with metabolic syndrome. Some patients will benefit from medications to correct the individual metabolic disorders. These include effective anti-hypertensive as well as elective cholesterol-lowering drugs.

Stress

Stress affects everyone. While we often think of stress as a negative risk factor in our lives, we forget positive stress often pushes us to produce good things. However, high levels of stress over a long period of time can affect our health. Stress causes an increase in blood pressure and heart rate, which puts extra pressure and workloads on the heart. During periods of stress, cholesterol levels in the blood stream are much higher than when things are calm. During stress, some people smoke more, eat too much fast food and do not get enough sleep.

There are many factors in our daily lives that cause stress. How we deal with stress influences how it affects the heart. Below are some tips to remember during a stressful period or situation;

- Talk with family, friends, and trusted advisors about your concerns and stresses. Ask for their support.
- Take time during the day to sit quietly and relax. Breathe in and out deeply. Read a calming book.
- Learn to accept things that cannot be changed. You don't have to solve all of life's problems in that moment.
- Count to 10 before answering or responding to someone when you are feeling angry.
- Do not use smoking, drinking, overeating, drugs or caffeine to cope with stress.
- Look for the good in every situation instead of the bad.
- Exercise regularly. Do something you enjoy like walking, swimming, jogging, golfing, gardening, walking a pet or cycling. Always check with your doctor to see what activity level is appropriate for you.
- Think ahead of what triggers may upset you and try to avoid them. Spend less time with people who bother you.
- Talk about your problems/stressors with your family and friends. The longer the problem stays bottled up inside the more it is going to bother you.
- Let the doctor know if the stress is becoming too overwhelming to handle. The doctor can then discuss your options.
- Maintain a positive outlook on life, surround yourself with positive people and remove negative influences and relationships from your daily life.

Alcohol/Drug Abuse

Alcohol and drug intake can cause damage to the heart and body in a number of different ways. Alcohol affects the ability of the liver to control cholesterol levels. The more alcohol/drug abuse that is done over time can cause the arteries to become hard and stiff, which can overwork the heart muscle causing a heart attack. Many recreational drugs are considered to be stimulants. Stimulants cause a dangerous increase in blood pressure and heart rate causing your heart to work harder than normal. This extra workload can lead to a heart attack. Alcohol and drugs may also interfere with medications the doctor wants you to take. The use of drugs or alcohol can dramatically slow down any recovery process. Talk to a doctor about options that can help with quitting drug and alcohol abuse.

MAKE A PLAN TO BE HEALTHY

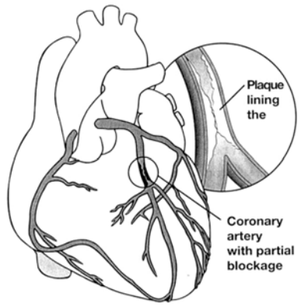
It is important to realize and be able to identify all cardiac risk factors in order to make adjustments for a new lifestyle. There are many things that can be done to gain control of the cardiac risk factors. Below is a table to help identify and modify those risk factors and action plans to prevent/decrease the risk for heart disease.

3. HEART DISEASE

CORONARY ARTERY DISEASE (CAD)

The cardiovascular system works to deliver blood, oxygen, and other important nutrients to the rest of the body. The blood flows through a network of arteries and veins.

The disease process called atherosclerosis can cause the arteries to become narrow or occluded. When this happens the arteries are not elastic and are unable to be stretched. When there is a blockage the blood is unable to flow freely to supply the body and the rest of the vital organs. When these blockages occur poor circulation is the result which can cause symptoms such as chest pain. Blockages can also lead to a heart attack.



Common Symptoms of Coronary Artery Disease that may be experienced

> Shortness of Breath
> Indigestion
> Chest Pain
> Nausea
> Hot and Cold Sweats
> Pain radiating down the arms or up into the jaw

Angina (Chest Pain or Discomfort)

Angina is thought to be the “classic” symptom of heart disease. It is caused by a temporary lack of oxygen to the heart muscle. Angina is not the same for everyone. Some people describe angina more as pain while others describe it as a heaviness or pressure. The pain is often felt in the chest but it can radiate down both arms, into the jaw, throat, or back. Some people can mistake angina for indigestion, and try to treat it by taking antacids. Others can experience feeling weak, tired and short of breath.

Symptoms of Angina

> Aching
> Numbness or tingling
> Burning sensation
> Pain
> Cramping
> Pressure
> Discomfort
> Shortness of Breath
> Fullness
> Sweating or Dizziness
> Heaviness
> Squeezing
> Indigestion
> Tightness

If any of these symptoms exist it may be appropriate to report to the nearest emergency room. To prevent any damage to the heart muscle, these symptoms should be evaluated as soon as possible.

Angina is considered to be a warning sign that the heart is not getting enough oxygen. There are two types of Angina: Stable and Unstable. A stable angina is when the pain is happening during times of exertion or stress. This can be caused when the heart is working harder to compensate for the exercise or stress being put on the body. An unstable angina is when the pain is happening when at rest or during the night while sleeping. This is a more serious condition and requires medical attention immediately! If a patient is experiencing angina on a regular basis the doctor may prescribe Nitroglycerin for the symptoms. The Nitroglycerin Action Plan should be followed when chest pain (Angina) is present.

Heart Attack (Myocardial Infarction or MI)

There are two ways a heart attack can happen

1. A blockage or not enough blood flow to the heart can cause an area of the heart to die. Additionally, a blood clot can form by the blood sticking to the plaque buildup along the artery wall. A blood clot will then cause a blockage in the blood flow not allowing oxygen to the heart. Lack of oxygen is what causes a heart attack.
2. Another form of a heart attack occurs when the artery spasms (squeezes) causing an interruption in the blood flow to the heart. This is a much less common condition.

Heart Attack warning signs include

> Loss of consciousness
> Nausea and/or vomiting

11. CARDIAC REHABILITATION

While in the hospital, the cardiac rehabilitation team will be part of the treatment plan. The specialists will be assisting the patient with walking so that they can chart the vital signs with activity for the doctor to measure progress. Additionally, they will be providing education to the patient and their family members or care takers. The education will prepare the patient and their family for what to expect after going home from cardiac surgery. This information is very important and should be kept with the patient while at home. Cardiac Rehab begins while the patient is in the hospital and will continue after being discharged from the hospital.

WHAT IS CARDIAC REHAB?

Cardiac Rehab is a medically supervised exercise and educational program. The medical professionals responsible for providing cardiac rehab care are exercise physiologists. Exercise physiologiss are allied health professionals who are trained to monitor the heart via a telemetry machine (records heart activity), take vital signs, provide education regarding the health of the heart and overall improve the quality of life for their patients. Cardiac rehab helps patients return to work and everyday activities with ease and confidence.

While attending cardiac rehab, a progress report will be sent to the patient’s cardiologist/doctor once a month. On the first visit to outpatient cardiac rehab, the specialist will develop a specific exercise regimen for each patient based on the patient’s health history, recovery process, abilities, risk factors, goals and interests. This program really gives patients the peace of mind knowing they are safe to exercise.

A big component of cardiac rehab is to reinforce the importance of daily activity. Daily physical activity is such an important part of leading a healthy lifestyle. There are so many physical and emotional benefits that go along with exercise. Exercise can help to:

> Decrease blood pressure
> Improve diabetes control
> Decrease weight and body fat
> Increase muscle strength and endurance
> Increase energy levels
> Decrease stress levels
> Improve balance and flexibility
> Reduce depression and anxiety
> Decrease the desire to smoke
> Improve overall self-esteem

GOALS OF CARDIAC REHAB

> Help patients feel better and improve their outlook on life.
> Live a healthier lifestyle.
> Reduce the risk of other heart problems.
> Educate patients on how to prevent future problems.
> Increase recovery rate after surgery.
> Increase knowledge of the patient’s health condition and recommend lifestyle changes.
> Get patients back to their everyday active lifestyles.

THE BENEFITS OF CARDIAC REHAB

> Increased understanding of the patient’s heart condition.
> Increased understanding of how a patient can alter their lifestyle to prevent future problems.
> Increased confidence in ability to return to physical activities.
> Improve strength and endurance.
> Emotional support from other patients for lifestyle changes.
> Gaining independence back.

PHASES OF CARDIAC REHAB

There are different phases of the Cardiac Rehab program. Cardiac rehab includes an inpatient setting (working with patients while they are in the hospital) and outpatient setting (working with patients after they are discharged and have time to recover from their surgery).

Phase I (Inpatient) Cardiac Rehab

Phase I Cardiac Rehab occurs while the patient is still in the hospital. One goal of Phase 1 cardiac rehab is to assist the patient in early activities under the safest conditions possible. The specialist will walk the patient while monitoring vital signs (heart rate, blood pressure, oxygen level and EKG) to ensure proper progress and a normal response during exercise. The main goal of this phase is to educate patients on how to take care of themselves when they leave the hospital. Another goal of this phase is to educate patients on how to take care of themselves when they leave the hospital.

> Sudden Sweating
> Rapid Heartbeat
> Severe Weakness
> Shortness of Breath
> Chest Discomfort
> Discomfort in other areas of the upper body

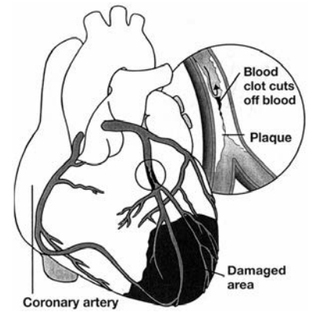
NOTE: Women are more likely than men to experience shortness of breath, nausea/vomiting, and back or jaw pain.

If your symptoms persist for more than 15 minutes it is very important to call 911. The less time it takes to get you to the hospital the better your chances are of preventing permanent heart damage. Time is critical!

THE DANGERS OF SNOW SHOVELING

After the first snow fall there are always stories of how perfectly healthy people shovel their driveways and end up in the hospital with a heart attack or worse. Studies show that:

> Energy expenditure during shoveling is nearly six times more than at rest. This can be compared to playing a vigorous round of singles tennis.
> During snow shoveling, the average heart rate and blood pressure rose to dangerously high levels. This response can be higher than what is experienced on a max treadmill stress test.
> After only two minutes of shoveling, most people exceed the upper limit for their heart rate that is safe for them during exercise.
> In just 10 minutes the average person can lift and throw nearly a ton of snow.



All of the above can deprive the heart of its much needed oxygen supply. This can lead to chest pain (angina) or dangerous heart rhythms that can be deadly. Also, the fast rise in blood pressure and heart rate can cause cholesterol and other substances to dislodge, resulting in a heart attack.

Who should avoid shoveling snow?

Men and women over the age of 45 who have a history of heart disease should avoid doing any heavy work outside in the winter. Also anyone with any known cardiac risk factors should avoid snow shoveling. Cardiac risk factors include; high blood pressure, high cholesterol, smoking, overweight or a sedentary (not active) lifestyle.

HEART VALVE DISEASE

Heart valves are responsible for regulating the blood flow through the heart. Damage to the valves can be caused by an infection such as rheumatic fever (scarlet fever) and/or age of the patient. Additionally, the heart valve can be damaged from birth. With heart valve disease, the valve is unable to open and close properly. This inefficiency can cause a backflow of blood in the heart. While this backflow is occurring the heart is unable to pump the right amount of blood to the rest of the vital organs. Some people may start to experience symptoms with a diseased heart valve.

These symptoms may include:

> Dizziness
> Chest pain
> Feeling tired
> Shortness of breath
> Swelling (fluid retention)

When the heart valve is no longer able to function the way it is supposed to the doctor may want to talk about surgery to repair or replace the valve.

Cardiomyopathy (Enlarged Heart)

The heart is a muscle. If there is a lot of pressure being placed on a muscle, the muscle will thicken or get larger and it will be harder for the heart to pump properly.

The most common causes of an enlarged heart are:

> Viral Infections
> Heart Defects from Birth
> Alcoholism
> Heart Valve Disease
> Chemotherapy
> CAD
> Malnutrition
> High Blood Pressure
> Toxicity
> Use of Recreational Drugs
> Obesity

Cardiomyopathy can lead to problems such as

congestive heart failure or cardiac arrhythmias (irregular heartbeat).

HEART FAILURE

Heart Failure happens when the heart is unable to pump properly to meet the needs of the rest of the body. Having this condition does not mean a person is going to die, or even that the heart has stopped pumping. What it does mean is that the heart has to work harder than it should. Heart Failure does not occur suddenly. It gradually worsens over time. It is important to be aware of the cause of heart failure and to let your doctor know if you are at risk.

Heart Failure can be caused by:

> Coronary Artery Disease (CAD)
> Previous history of a heart attack
> Heart defects present at birth
> Heart valve disease
> High blood pressure
> Lung disease
> Infection of the heart muscle (endocarditis)
> Infections of the heart itself (myocarditis)

OTHER IMPORTANT INFORMATION

4. CARDIAC TESTING

It is very important to be aware of certain tests that may be done to determine the severity of heart disease. This section will explain all of the different tests a patient may undergo to determine what type of treatment may be needed.

Before participating in the following tests, discuss with the doctor what medications need to be taken or stopped prior to the test. Certain tests require that medications are stopped, while others may require certain special medications. Adjust any medication only when specifically instructed to by the doctor. In addition, if certain equipment will be needed while in the hospital, such as a sleep apnea machine, please notify the nurse so that all needed equipment is available.

STRESS TEST

This is a test that tells the doctor how the heart responds when it is put under chemical or physical stress. A doctor may want to order a stress test to determine:

- If the symptoms are related to heart disease.
- If prior prescribed treatments are still working properly.
- The test is completed by walking on a treadmill, while being monitored by an EKG and trained medical staff.
- If exercise cannot be completed, different medications will be given to make the heart behave like it was exercising.
- During this test, pictures of the heart may be taken prior to and after exercising. (These pictures are to give the doctor more information.)

ECHOCARDIOGRAM: (ECHO)

An ECHO creates a moving picture of the heart using sound waves. This is also known as an ultrasound of the heart. An ECHO is prescribed when the doctor wants to know how well the heart is pumping or if there are any possible problems with the heart valves or heart walls.

EJECTION FRACTION (EF)

This is a measurement of the percent of blood being pushed out of your heart with each beat. A normal heart pumps out slightly more than half the heart's volume of blood with each beat. A normal EF is considered to be 55-65%. If the measurement is lower than normal, further testing or treatment may be warranted.

TRANSESOPHAGEAL ECHOCARDIOGRAM (TEE)

This is a special type of ECHO. It is used to look for heart defects, valve problems, and blood clots in the heart.

HEART SCAN

This is a new form of technology that allows the doctors the ability to see the coronary arteries using a specialized machine called a CT machine. An IV will be started to allow dye in the blood stream to get a better view of the coronary arteries. As the dye is going through the blood vessels, a series of pictures are taken that will show whether there are blockages in the arteries.

HEART (CARDIAC) CATHETERIZATION

This is the best way to tell if there are blockages in the heart that need to be treated or to tell how well the heart and heart valves are working. This test can be scheduled as an outpatient procedure or completed in an emergency if sudden chest pains occur.

- An area in the groin, wrist, or arm will be numbed so that an IV catheter can be inserted into one of the arteries. A burning sensation will be felt, but will go away.

ELECTROPHYSIOLOGY (EP) STUDY

An EP study is done to find out what is causing an irregular heart rate or rhythm (arrhythmia) and what should be done to fix it.

5. THERAPEUTIC PROCEDURES

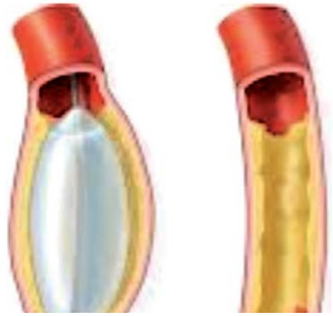
There are some common procedures that are used to treat problems with the heart. The doctor will determine the best treatment options available depending on the evaluation of symptoms and past medical history.

PERCUTANEOUS CORONARY INTERVENTION (PCI)

PCI is a common procedure used to open up blocked arteries in order to clear a path for blood flow. This is used during a cardiac catheterization. Certain PCI procedures are:

> Balloon Angioplasty: A balloon-tipped catheter is used to widen a narrowed artery. This is going to restore blood flow through narrow or blocked arteries.

BALLOON ANGIOPLASTY



A. Deflated balloon catheter is approaching an atherosclerotic plaque

B. Plaque is compressed by inflated balloon

C. Plaque remains compressed after balloon catheter is removed

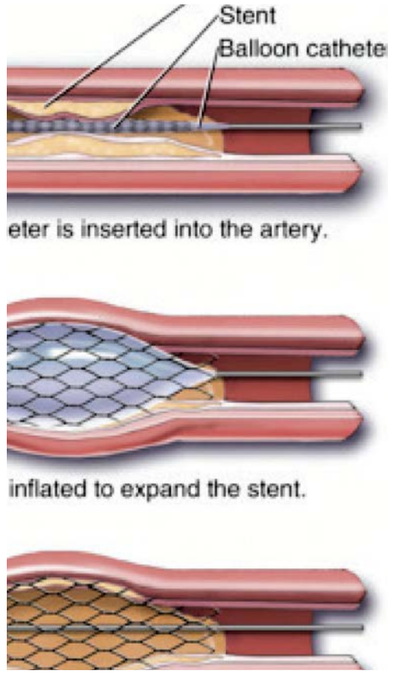
http://biology-forums.com

> Stenting: A metal mesh tube is inserted in the area widened by the balloon to hold the artery open. After a certain amount of time the artery will heal around the stent.

> Atherectomy: A special catheter is used to grind or cut away a blockage.

In most cases the doctor will keep the patient in the hospital overnight after this procedure. It is important to be monitored and the doctor may want to administer a medicine to prevent blood from clotting and causing another blockage around the stent.

STENTING



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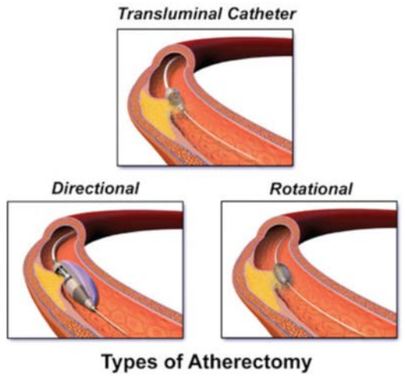
ATHERECTOMY



Types of Atherectomy

http://en.wikipedia.org

10. TRACKING YOUR PROGRESS

Every morning use this chart to keep track of the patient's body weight. This is important since it gives an indication of any fluid retention that could cause problems in the future. After recording the weight, there are certain symptoms that the patient should be aware of and track if necessary. If any of the symptoms are being experienced by the patient, contact the doctor immediately.

Symptoms/Day	1	2	3	4	5	6	7	8	9	10	11	12
Today's Weight												
Blood Pressure												
Pulse												
Dry, hacking cough												
Bloating												
Fatigue or Weakness												
Irregular or fast heartbeat												
Needing to sit up during sleep												
Shortness of breath with activity												
Shortness of breath while sleeping												
Swollen feet, ankles, or legs												
Urinating more at night												
Waking up short of breath												

Emotions

Depression is a common experience upon returning home. The emotional let-down after any operation may cause such feelings. Progress may not seem fast enough and some people can become frustrated with the slow recovery. The best way to get rid of this depression is to talk about it with all loved ones and trying to keep busy. Remember this is considered normal after any major operation and it should continue to get better with time. If the patient is physically getting better but the depression is getting worse, let the doctor know.

WHEN AND WHAT SHOULD BE REPORTED TO THE DOCTOR

Some things are considered normal after surgery. You may notice:

> Pain: Incision pain is normal. Pain will decrease with time and medication.

> Shortness of Breath: With activity, some shortness of breath is normal. This should go away with rest. If shortness of breath gets worse while resting please let the doctor know.

> Increase in Pulse: In general, the pulse should increase with activity but return to normal within 2-5 minutes of rest.

> Weight Gain: the patient will probably lose some weight while in the hospital. This weight should be regained once at home when a normal appetite returns It is important to be aware of any rapid weight gain. Remember 2-3 pounds of weight gain in one day or 5-6 pounds in one week can show signs of fluid retention. Let the doctor know right away if there is rapid weight gain.

> Temperature: The patient does not need to take their temperature every day. If they begin to feel warm or feverish, however, check their temperature. A slight fever is considered normal. However, if the fever lasts for a couple of days please let the doctor know.

Call Your Doctor Immediately If

> Severe shortness of breath.

> Blackout or fainting spells occur.

> A consistently irregular pulse when the pulse is regular.

> Pounding or fluttering sensations in the chest.

NOTE: If the patient is having severe problems make sure to report to the nearest emergency room!

It is very common to feel the heart beat and even hear the beats while asleep. This is because the lining (pericardium) that covered the heart is opened during surgery and usually not closed thereby allowing easier outward transmission of the heart beats and movement across the chest wall.

Tell Your Doctor within 24 hours of occurring. If

> Temperature is over 100 degrees Fahrenheit for more than 24 hours or is accompanied by redness or pus along the incision site.

> Pain in the calf or thigh of either leg, especially if there is any redness, swelling, or spots that are hot to the touch.

> Pulse is below 50 bpm, even with activity, or above 120 bpm with rest or little activity.

> A weight gain of more than 2-3 pounds in one day or 5-6 pounds in one week.

> Shortness of breath, which is getting worse with time and/or if it is easier to sleep with the head elevated in order to breathe easier.

AFTER HEART VALVE SURGERY

If the surgery occurred to replace or repair one of the heart valves, the patient should understand that an artificial valve, or a diseased valve, is more likely to develop endocarditis. Endocarditis is a bacterial infection of the inner lining of the heart and the heart valves. The infection causes “wart-like” growths that can damage or destroy natural and/or artificial valves. Endocarditis can occur suddenly or develop slowly. Symptoms include:

> Weakness, fatigue (a tired, dragged out feeling)

> A low grade fever (less than 100 degrees F)

> Chills

> Unusual sweating

> Aching or unexplained soreness in joints

To prevent infection, antibiotics are given to patients when there is a possibility of introducing bacteria into the bloodstream. The following procedures usually require antibiotics before they are performed.

> All dental procedures.

> Any surgical procedure whether major or minor.

> Any other medical procedure where there is the possibility of allowing bacteria to enter the bloodstream.

NOTE: It is important to talk with any doctor or dentist performing the procedure ahead of time to inform them that there is a medical history of heart valve surgery.

After being discharged from the hospital patients are prescribed a medicine to take daily in order to prevent their blood from getting thick and sticky. Patients are also given a card that will have the information about their condition and the stent devices. It is important for patients to hold on to this card and be sure it is used to keep their medical records updated.

CATHETER ABLATION

This is a nonsurgical procedure that is similar to a heart catheterization. The main reason a doctor would want to perform this procedure is to help regulate any irregular or rapid heart rhythms. The heart has its own electrical system. This electrical system can begin to have malfunctions. The electrical system can begin to have problems in the top part of the heart (atria) or the bottom part of the heart (ventricle). If this problem is detected the doctor may want to perform an ablation. The doctor will insert a special electrode catheter into the heart. The catheter will be positioned so that it lies close to the electrical pathway that is causing the irregular heartbeat. Once it is in position there will be radiofrequency (heat) passed through it. This heat is going to destroy (ablate) the small area of the tissue that is causing the abnormal heartbeat. This will allow the heart to beat in a normal rhythm again.

CARDIOVERSION

This is a short procedure that is used to deliver an electrical shock to the heart in order to shock the heart back into a regular rhythm. This procedure may need to be combined with a Catheter Ablation or Implantable Cardioverter Defibrillator in order to maintain a regular heart rhythm.

ELECTRONIC DEVICES

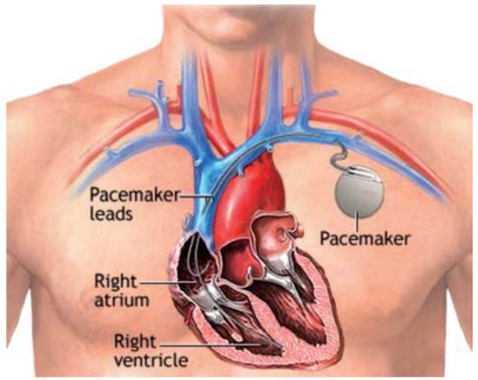
Cardiac Pacemaker

A pacemaker is one device that can be implanted to help the heart. It is about the size of a half dollar. It regulates the heart rate when it gets too slow or too fast. When the heart rate needs to be regulated the pacemaker sends an electrical impulse to the heart to beat at a more controlled rate.

Implantable Cardioverter Defibrillator (ICD) (1-12)

Some patients have fast heart rhythms that can be very serious and life threatening if not monitored. The ICD monitors information about the heart. The computer is programmed to give an electric shock

PACEMAKER



http://www.nlm.nih.gov/medlineplus/ency/images/ency/fullsize/19566.jpg

to the heart if it senses a rhythm that could be life threatening. This electric shock interrupts the irregular heartbeat and allows the heart to return to a normal safe rhythm. ICD’s can also work like a pacemaker and in some cases the doctor may feel the patient should have both.

Biventricular Pacemakers and Defibrillators

Over time the heart can become weak and/or increase in size. This can be a result of chronic congestive heart failure. When the heart becomes enlarged or weak it is harder for it to pump properly. If this happens the cause could be that the bottom two parts of the heart (ventricles) are not beating together in sync. In this case the doctor may want to implant a special type of pacemaker or defibrillator called a biventricular device. Unlike a regular pacemaker that is working from the right side of the heart only, this device has a extra wire that goes into a vein on the surface of the left side of the heart. By sending an electrical impulse to both sides of the heart at the same time the heart will contract properly and will beat in sync again. This will make the heart stronger and a more efficient pump. If needed, some of the devices can function as a defibrillator also.

6. DEPRESSION AND HEART DISEASE

This type of procedure/disease process is going to cause a major change in the patient's lifestyle. It is 100% normal to go through some sort of depression or "blues" after getting home. These feeling are more related to being frustrated, than anything else since the patient is not going to be able to do the things they are used to doing immediately. It is not unusual to have those "up and down days" for several weeks after leaving the hospital. The patient's life has been changed due to surgery, thus they must adopt to a new way of living, such as, following a new diet regimen, incorporating exercise into one's daily routine and being more aware of daily symptoms. It is very important to have someone to talk to that is trusted. This could be a spouse, child, other family members, or close friends. Never be ashamed of these feelings. If the patient has more days of felling down and bad days outweigh the good days, they may be depressed.

NOTE: The patient will always have good and bad days. When the bad days start to outnumber the good, the patient may be going through depression. This is considered normal after going home from open heart surgery. If this feeling of depression gets worse over time and the patient is healing physically but not emotionally, it is really important to talk to a doctor about the different treatment options to help with these feelings.

SIGNS OF DEPRESSION INCLUDE

> Difficulty sleeping
> Loss of appetite
> Weight loss
> Fatigue
> Emotional stress (feeling tense, irritable or easily agitated)
> Trouble concentrating
> Loss of interest in your usual activities
> Feelings of worthlessness, inadequacy or constant sadness

Arm incision

If the radial artery was used from the arm, numbness may occur in the fingers. The numbness will improve over time.

If the following symptoms are present and worsening, contact the surgeon immediately for an appointment.

Signs and Symptoms of Infection

> Redness
> Incisions that becomes hot to the touch or swollen.
> Pus or oozing from the incision.
> Having a fever over 100 degrees for more than a day.
> If the incisions begin to open.
> If there is a strong odor coming from the incision.

IMPORTANT REMINDERS

Daily Weighing

Daily weighing is an important part of the recovery process. Every morning, upon waking, use the bathroom. Make sure to empty the bladder completely. Once the patient is done using the bathroom, they should weight themselves. If there is a weight gain of 2-4 pounds in one day or 5-6 pounds in one week, let the cardiologist/surgeon know. Weight gain can be an early warning sign of congestive heart failure. Make sure to let the doctor know right away so the patient's weight can be reduced to prevent any further medical problems.

Deep Breathing

Please continue to use the breathing machine (incentive spirometer) that was received in the hospital. Take 10 deep breaths every hour while awake. By using the breathing machine regularly, this will help prevent against pneumonia, congestive heart failure and blood clots.

Bathing

Once discharged from the hospital and at home take a shower. It is important to have a family member or close friend nearby just in case the patient begins feeling dizzy. If a shower chair or bench is available, the patient may feel more comfortable sitting down while showering for the first couple of times. After a few times showering while seated, standing while showering should be more comfortable since the patient should be stronger and have less dizzy spells while standing. Make sure to use lukewarm water to prevent the blood pressure from dropping. Do not take tub baths until 2-3 months after surgery. This helps prevent infections in the incision site. Also, the patient should not be lifting their body weight until 2-3 months after surgery.

Smoking

Smoking has negative effects on health. If the patient was a smoker before surgery it is very important to quit. Studies have shown smoking can significantly reduce the life of the bypass grafts by half. Since the patient was not able to smoke while in the hospital, keep up the good work at home. If help is needed with quitting, please talk to the doctor. There are a lot of different options, such as smoking cessation classes or certain medications that can help with quitting.

Follow Up Appointments

Before leaving the hospital, an appointment will be scheduled for the first post-op appointment (follow up appointment) with the surgeon and cardiologist. This appointment will be approximately 2-3 weeks after surgery. An appointment should also be made by the patient to follow up with their primary doctor after returning home.

Returning to Work

For every person, returning to work will be different. People heal differently and some jobs are more physical than others. Based on clearance from the doctor a patient will normally be allowed to return to work 8-12 weeks after surgery. This will be discussed with the patient by the doctor.

Recreational Activities

> It is important to ask the doctor before resuming activities such as bowling, hunting, swimming, tennis and any other strenuous activities.
> Avoid exercises involving heavy weight lifting.
> Ask before using whirlpools, hot tubs or saunas.

Change in Lifestyle

The purpose of this operation is to restore a sense of well-being and allow the patient to do the things they like. The patient will be able to lead a safe and active lifestyle. In order to make the surgery successful, lifestyle changes of the patient are required. Changes include; maintaining a healthy weight, stop smoking, regular exercise and beginning to follow a heart healthy diet regimen. All of these will help the patient get back to, or become, an active person.

Stair Climbing

Stairs can be very hard work. They are also considered great exercise. The patient may climb full flights of stairs, if needed, but should be limited to two (2) flights per day. It is important to remember not to do these multiple times per day. Up and down the stairs counts as one flight. Take time and use a handrail if available. Make sure to rest between flights.

Driving and Transportation

Most patients are driven home by a family member. It is important to place a small pillow or blanket between the chest and the seatbelt. This will protect the incision from being rubbed on by the seatbelt. In the event of an accident, the pillow will help cushion the blow.

Driving can be stressful. Do not drive until cleared by the surgeon. This appointment will be 3-5 weeks after surgery. This is the time required for the breastbone to start fusing and healing. Also a new medication(s) may have been prescribed that could cause possible side effects. These side effects can lead to reactions that may affect the patient's ability to drive.

Before planning any long trips within the first six weeks after surgery, the surgeon should be consulted. When traveling long distances, it is important to keep the legs moving and plan to stop every 1 – 2 hours so short walks can occur. This will help prevent blood clots from forming in the legs.

Air travel is strongly discouraged within the first 1-2 months after surgery.

Chores

Once feeling better and stronger light chores can be performed around the house. These chores can include dusting, light cooking, dish washing or folding laundry. Do not do any vacuuming, window washing or floor scrubbing until 2-3 months after surgery. Use your best judgment and listen to the body.

Sexual Relations

When able to climb two flights of stairs without getting short of breath sexual relations can resume. Do not support your body weight if it has not been 2-3 months since the surgery.

INCISION CARE

It is important to make sure the incisions are washed well at least one time per day. This will help decrease any risk of infection. Do not use any washcloths on the incision site. A washcloth can get caught on the incision and cause it to bleed or open. No harsh scrubbing should occur. Place any type of antibacterial soap on the hands and rub them together. Gently pat/rub the incision with the soapy hands. Let the water trickle down and rinse the incision site. Never put any lotions, oils, or creams on the incisions.

Sternal (midline) incision

During the first weeks after surgery, the sterna (chest) incision may be bruised. It may also itch, feel numb or be sore. In just a few weeks, the scar will begin to look better. In most cases, it is normal to have a lump at the top of the incision. This will slowly go away.

Changes in the weather, too much (or too little) activity and sleeping in one position can cause soreness. At times, the shoulders and back may also feel sore. All of these things are common and will slowly go away. For back and shoulder soreness, some people use a heating pad on the lowest setting. Maintain good posture and move the neck and shoulder muscles in a normal way. This will help be less stiff. A mild pain reliever may also help with discomfort. Take it with food to avoid problems with nausea.

Women may find that wearing a bra can add support and reduce pain. Choose a comfortable, loose-fitting bra that is not binding. Wear it throughout the day and at night if it helps.

Chest tube incisions

These incisions are usually small incisions below the main incision and on either side. They may have retention sutures in place which are usually removed by the home care nurse. Any initial or subsequent opening at that level may have some whitish exudates. This is common and does not usually represent a sign of infection in the absence of associated signs and symptoms like redness, indurations and pain.

Leg incisions

The veins are usually harvested using endoscopic techniques so there will only be small incisions in the legs. However, the areas away from the incisions may be hard and painful as this represents the veins bed. Patient with leg incisions may notice swelling in their lower legs. To help decrease the swelling, elevate the legs while sitting and avoid crossing them. Wear the support stockings, if given, during the day time. Remove them and wash them overnight.

HEART ATTACK

It is important to follow the discharge instructions after going home from cardiac surgery. This information will provide the patient with restrictions/guidelines on how to perform self care activities while at home.

LEAVING THE HOSPITAL

When the doctor feels that recovery is going well, they will discharge the patient from the hospital. Once the patient is ready for discharge after surgery, the Cardiac Rehab Specialist will give discharge instructions for when at home. It is very normal to be nervous and uneasy about leaving the hospital. Depending on recovery and the doctor, a visiting nurse may be arranged to come to the house to make sure all vital signs are within normal limits. It is also important for those nurses to check the incisions to make sure they are healing properly with no signs of infections. The homecare nurses are also there to reinforce all of the cardiac education/information that was received at the hospital and to answer any other questions that may arise.

THINGS TO EXPECT POST SURGERY

- Lack of energy and fatigue for days to possibly weeks after discharge.
- Difficulty sleeping. Avoid late afternoon naps and caffeine. Take pain medications prior to going to bed at night.
- Difficulty finding a comfortable position to sit/sleep in. There is no specific position that is recommended from the clinical standpoint.
- Depression
- Lack of appetite
- Soreness/tenderness in the incision site on the chest
- Constipation

MEDICATIONS

Before going home the nurse will go over the list of medications that were prescribed. It is important to make copies of this list to give to others who may need it. Family members should have a list of medications in case an emergency occurs. Frequently, the doctor will order new medications to help regulate the heart and to help with the recovery process. Long-standing heart disease, which can be improved by surgery, will still require medical treatment (see medications section at the end of this booklet for more information).

Don't be surprised if the list of medications and/or dosage is different than what was being taken prior to surgery. It is important to follow the specific prescriptions given upon discharge and not to go back to the old prescription. Please call the cardiologist if the medication will run out before seeing the doctor for the first time after surgery.

PHYSICAL ACTIVITY

It is not unusual to be very tired and weak after leaving the hospital. It is important to be active when at home. These activities will include walking around the house for the first couple of days in order to increase blood circulation and maintain muscle strength. Walking is considered to be the best exercise for the heart and the body after surgery. Listen to the body and begin walking only for a few minutes at a time. Repeat this 3-4 times per day. Try to avoid any extreme twisting, turning, pushing, pulling or shoving. Initially, all movements are going to be limited and slow.

Avoid any extremely hot, cold or high humidity conditions. If it is really hot and humid outside try to exercise earlier in the morning or later in the evening when it is a little cooler. Do all exercises inside during really cold times to prevent further heart problems.

Lifting Restrictions

Healing the sternum is why restrictions/cautions are put in place after surgery. The sternum is held together by stainless steel wires which cannot be felt or seen. These wires are not removed, so they will show up on X rays and may trigger metal sensors. For security purposes, the patient may need to show their incision to security personnel.

It takes 4-6 weeks for the sternum to have a substantial fusion and 2-3 months for complete fusion. During this healing time, lifting restrictions will be required. Generally, depending on the type of incision, the patient is advised not to lift more than 5-8 pounds for the first 2-3 months. Any extreme twisting, pushing, pulling or heavy lifting could cause that breast bone to shift. If the bone shifts it will not heal properly.

During the healing time, a slight clicking or movement of the sternum with some activities may occur. This is relatively common and should go away when the sternum heals. Report it to the home care nurse and/or doctor if the clicking seems to be getting worse.

After the first 2-3 months after surgery, the patient will be able to gradually go back to everyday chores and tasks.

9. DISCHARGE INSTRUCTIONS FOLLOWING CARDIAC SURGERY

Cardiovascular Surgery Discharge Instructions

ACTIVITY

> Walk 10 to 15 minutes, 3 to 5 times daily. Increase your activity as tolerated. Avoid extreme temperature and humidity.
> Do not lift, push, or pull more than 5 pounds for 4 weeks.
> Elevate your legs when sitting, and do not cross your legs.
> Get up slowly after lying or sitting, this will limit dizziness.
> Shower daily with mild soap and water. Do not apply creams, powders, or lotions to the incision area. No tub baths.
> Do not drive a motorized vehicle for 4 weeks. You may prefer to ride in the back seat.
> Do not return to work until the surgeon approves.

LIFESTYLE

> Do not smoke. Smoking increases your chances of heart disease and cancer.
> Follow a heart healthy diet. If you are diabetic, follow your caloric restrictions.

SPECIFIC TREATMENTS

> Keep your incisions clean and dry. Unless otherwise directed, keep incisions open to air.
Call your home care nurse if there is any new or increased drainage (pus), redness, tenderness, opening to your incisions.
> Take your temperature once daily.
Call your home care nurse if your temperature is greater than 101 degrees.
> Weigh yourself at the same time each day, wearing the same type of clothing.
Call your surgeon if you gain 2 lbs or more in 1 day, or 5 pounds in less than a week.
> Continue to wear your support stockings until seen by the surgeon. These can be removed at night.
> Continue your breathing exercises every 2 hours while awake.

COMMON CONCERNS

> Trouble sleeping at night: Try to take a pain pill before sleeping at night. Daytime naps will disturb your nighttime sleep pattern. Increase your activity.
> Poor appetite: Try to eat foods with good nutrition. Frequent, small meals will be easier to tolerate than larger meals. Poor appetite may be related to constipation, if so, take a stool softener to regulate your bowels.
> Difficulty breathing: If breathing is more difficult /shorter, or if you have a cough that produces sputum, call your surgeons office.
> Increased surgical pain: This is most often related to increased activity. You may need to reduce your activity. Make sure you are taking your pain pills at regular intervals.

If you need immediate attention and you are unable to reach your surgeon, go to the nearest Emergency Room or call 9-1-1.

7. DISCHARGE INSTRUCTIONS FOR MYOCARDIAL INFARCTION/HEART ATTACK PATIENTS

WHAT'S NEXT?

The patient just went through a major, life-altering procedure and it can be very scary to leave the hospital to take care of themselves. The patient may be wondering what comes next. A cardiac rehab specialist will educate the patient and family member on what to expect once they get home. Surgery was done to increase blood supply to the heart. This procedure does not cure or get rid of the heart disease. Now is the time to make those lifestyle changes needed to maintain renewed heart health. These changes include:

> Taking medications as prescribed by the doctor(s).
> Quitting smoking
> Treating high cholesterol
> Maintaining a healthy blood pressure
> Managing diabetes
> Exercising regularly
> Maintaining a healthy weight
> Eating a heart-healthy diet
> Controlling stress and anger levels
> Participating in Cardiac Rehab
> Following up with the doctor on a regular basis

Being released from the hospital can be a scary feeling for most patients. Going home after a heart attack can make a lot of people feel uneasy and unsure about what they can or cannot do. Below are some tips/recommendations to be aware of after going home.

Walking

It is important to keep moving in order to increase blood circulation. As tolerated, begin walking. Walking is a great way to be active, but safe. As the patient begins to feel better, gradually increase the walking activity. Always include a five minute warm-up and cool-down to prepare the body for exercise and rest. If symptoms occur, such as, dizziness, chest pain or shortness of breath, slow down or stop (if not resolved after slowing down).

Bathing

Use lukewarm water in the shower. Water that is too hot or too cold can cause blood pressure to fluctuate. This can ultimately make the patient feel dizzy or lightheaded. Get out of the shower and sit down if feeling lightheaded or dizzy. Avoid holding the arms overhead for any length of time.

Resting

Resting is just as important as activity. After a heart attack, the heart needs to recover. Listen to the internal signs from the body. If the patient begins to feel tired make sure to take breaks and naps as needed.

Stair Climbing

Stair climbing is considered to be strenuous activity. Stairs can cause shortness of breath. If there are stairs that must be climbed, climb them; just limit this activity to 1- 2 times per day. Always rest between flights or when needed. Continue to be cautious of stairs for the first 2-4 weeks after being discharged from the hospital.

Driving

Do not drive until permission is given from the doctor. Wait until the follow-up appointment to find out if it the doctor gives the patient permission to drive.

Sexual Activity

As a general rule sexual activity can be very strenuous on the body. Once the patient is able to climb two flights of stairs without issues or concerns, sexual activity can resume.

Lifting

Lift no more than 30 pounds for the first month or until the doctor gives permission to lift more.

Housekeeping

Light housework such as dusting, dishes, cooking or folding the laundry can begin once discharged from the hospital. Avoid vacuuming or window washing for the first month or until the doctor gives permission.

Going Outside

Avoid any extremely hot, cold or high humidity conditions. Hot and humid conditions can cause dehydration and heat stroke. If it is hot and humid outside try to exercise earlier in the morning or later in

the evening when it is a little cooler. Do all exercises inside during really cold times, below 40 degrees to prevent further heart problems. Wear something over the face when the temperature is low to warm the air as it comes into the lungs and body.

Yard Work

Eliminate heavy yard work such as lawn mowing or raking leaves for at least the first month after the heart attack. Here are some tips for doing yard work.

> Work for shorter periods with less intensity when it is really warm outside especially if the humidity is high.
> Make sure to drink lots of fluids to prevent dehydration.
> Work outdoors during the cooler parts of the day.
> Take breaks, especially when tired.
> NEVER shovel snow in the winter!! This could cause another heart attack.

HEART SURGERY ZONE

Everyday

Every Day:

> Do not remove your **RED** bracelet.
> Weigh yourself in the morning before breakfast, write it down and compare to yesterday's weight. Track your weight on the "Track Your Progress" table on pages 77-78.
> Take your medicine as prescribed.
> Check for swelling in your feet, ankles, legs, and stomach.
> Eat low-salt food.
> Balance activity and rest periods.
> Walk.

Which Heart Zone are you today? GREEN, YELLOW or RED?

Green Zone

Green Zone = "All Clear"

> No cough, chest tightness or shortness of breath during the day or night
> No decrease in your ability to maintain normal activity

Green Zone Means:

> Your symptoms are under control
> Continue taking your medications as ordered
> Follow a low-salt diet
> Continue your exercise plan
> Keep all physician appointments

Yellow Zone

Yellow Zone = "Caution"

> Increased swelling of ankles or feet
> Increased shortness of breath with activity
> Weight gain of 2 pounds or 5 pounds/week
> Fever of 100.5° F (oral) or 99.5° F (under your arm)
> Dry cough that develops at night
> Increased redness/swelling/drainage over surgical incision
> Increased shortness of breath while lying flat at night
> Anything else unusual that bothers you

Yellow Zone Means:

> Your symptoms indicate that you may need an adjustment in your medication
> Call the number on your bracelet or your physician:

Primary Physician:

_____

Physician Phone Number:

_____

Red Zone

Red Zone = "Medical Alert"

> Unrelieved shortness of breath
> Unrelieved chest pain not due to incision
> Wheezing or chest tightness
> Increase in heart rate with fluttering feeling
> Change in color of your skin, nail beds or lips to gray or blue
> Mental status change
> Chest pain or pain that worsens not due to incision
> Sudden onset of dizziness or excessive sweating while resting

In An Emergency Situation Call 9-1-1

Red Zone Means:

> This indicates that you need to be evaluated by a physician right away
> Call your physician or call 9-1-1

Primary Physician:

_____

Physician Phone Number:

_____

8. ANGINA (CHEST PAIN OR DISCOMFORT)

Angina is thought to be the “classic” symptom of heart disease. It is caused by a temporary lack of oxygen to the heart muscle. Angina is not the same for everyone. Some people describe angina more as pain while others describe it as a heaviness or pressure. The pain is often felt in the chest but it can radiate down both arms, into the jaw, throat, or back. Some people can mistake angina for indigestion, and try to treat it by taking antacids. Others can experience feeling weak, tired and short of breath.

Symptoms of Angina

- Aching
- Numbness or tingling
- Burning sensation
- Pain
- Cramping
- Pressure
- Discomfort
- Shortness of Breath
- Fullness
- Sweating or Dizziness
- Heaviness
- Squeezing
- Indigestion
- Tightness

If any of these symptoms exist it may be appropriate to report to the nearest emergency room. To prevent any damage to the heart muscle, these symptoms should be evaluated as soon as possible.

Angina is considered to be a warning sign that the heart is not getting enough oxygen. There are two types of Angina: Stable and Unstable. A stable angina is when the pain is happening during times of exertion or stress. This can be caused when the heart is working harder to compensate for the exercise or stress being put on the body. An unstable angina is when the pain is happening when at rest or during the night while sleeping. This is a more serious condition and requires medical attention immediately! If a patient is experiencing angina on a regular basis the doctor may prescribe Nitroglycerin for the symptoms. The Nitroglycerin Action Plan should be followed when chest pain (Angina) is present.

NITROGLYCERIN ACTION PLAN

- Stop what you are doing and rest for five minutes.
- If the pain does not go away with rest, put one nitroglycerin under your tongue and let it dissolve.
- Wait another five minutes.
- If the pain is still there and not going away take one more nitroglycerin tablet and place it under your tongue and let it dissolve.
- If you have to take two pills you should call an ambulance to get medical attention.
- After calling for an ambulance and waiting another five minutes you can take a third Nitroglycerin pill. The ambulance should be there by then to help.
- DO NOT DRIVE YOURSELF TO THE HOSPITAL
- Never take more than three of those pills at once. Each pill can drop your blood pressure making you feel dizzy and pass out!
- If you have to start using nitroglycerine more frequently let your doctor know.

HEART SURGERY