Advanced Heart Failure
Patient Education Program
This book belongs to
Welcome to the Advanced Heart Failure and Transplant Program at Methodist Heart Hospital*!
Our heart clinic staff, in conjunction with the staff of Texas Transplant Institute, looks forward to assisting you in the management of your heart failure symptoms.

We offer medical and surgical therapies for heart failure including optimal medication management, inotropic therapy, mechanical assist devices and heart transplantation. Our team members are experts in heart failure management and will determine the best therapeutic strategy for you at every step of your disease process. We are pleased to offer you our outpatient education program. You will learn about the importance of proper nutrition, medications, exercise and maintenance of your symptoms.

You can take control of your heart failure by understanding and carefully following your treatment plan. Please share this manual with your caregivers, family members and friends so they will better understand how to recognize symptoms of worsening heart failure and ways to promote your health maintenance. Thank you for allowing us to participate in your care.

*A Methodist Hospital facility

Continuing the Legacy of Hope
Through Patient Care, Research and Education

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How Your Heart Works

“But the heart refuses to be imprisoned, in its first and narrowest impulses it already tends outward with a vast force to immense and innumerable expansions.”

~Ralph Waldo Emerson
Basic Anatomy of the Heart

Your heart is divided into two parts: the right side and the left side. The right side is composed of the right atria and right ventricle, which pumps blood to the lungs. The left side contains the left atria and left ventricle, which pumps blood to your body. When your heart pumps blood from the **LEFT VENTRICLE**, it goes out from the **AORTA** through the other arteries to the rest of your body. The blood is rich with oxygen. When your blood comes back for more oxygen, it flows back through the veins (**SUPERIOR & INFERIOR VENA CAVA**) and fills the **RIGHT ATRIA**. Then it goes to the **RIGHT VENTRICLE**, through the **PULMONARY TRUNK**, straight to your lungs to get more oxygen. The blood comes back to your **LEFT ATRIA** and then to the **LEFT VENTRICLE** which starts pumping the oxygen-rich blood around your body again!

As your heart relaxes and fills with blood coming back from the body through the veins, this is called **DIASTOLE**. You may recognize the term diastole or “diastolic” as the bottom number of your blood pressure reading. When the heart pumps, or contracts, this is called **SYSTOLE** and the “systolic” blood pressure is the top number of your blood pressure reading.

When your heart pumps and fills the right way, your other organs can get enough blood to work properly. You can breathe normally, absorb food and make waste the right way, sleep well at night and feel like doing your normal activities. But when your heart stops pumping like it should, your organs start to have problems. You start to experience signs and symptoms of heart failure. However, don’t be discouraged by the word “failure”. Your heart hasn’t failed to pump or stopped beating. It simply has become weak and will need help from you and your doctor to get healthier!
Signs and Symptoms of Heart Failure

“The heart is the only broken instrument that works.”
~ T.E. Kalem
What is Heart Failure?

Heart failure occurs when the heart muscle becomes weak from damage and cannot fill or empty the blood from the heart properly. When the heart weakens, it can’t push the oxygen-rich blood to organs like the liver and kidneys. When the kidneys and liver don’t work properly, water and salt in your body can build up and cause swelling in your stomach, hands, legs and feet. Blood that should be pumped out from your heart also backs up into your lungs and causes shortness of breath. The extra fluid puts a strain on your heart because it will now have to pump the regular amount of blood around with the other added fluid. This may create an “enlarged heart” because the muscle fibers of your heart have to stretch to keep up with the demand of your body fluid. Heart failure then gets worse because the enlarged or thickened heart muscle will not be able to pump the blood to your body the way a normal size heart would.

What are the Causes of Heart Failure?

♥ Cardiomyopathy ~ A weakening or change in the heart muscle that causes a decrease in the pumping function of the heart. Causes of cardiomyopathy can be related to viruses, family history, complications from pregnancy, certain adverse effects of medications, and congenital heart defects. If the cause is unknown, it is considered “idiopathic cardiomyopathy.”

♥ Coronary Artery Disease ~ Blockages in your heart that may or may not have caused a heart attack in the past

♥ Hypertension ~ High Blood Pressure

♥ Heart Valve damage

♥ Alcohol or drug abuse

♥ Abnormal heart rhythms

♥ Severe lung disease

♥ Thyroid disease

♥ Anemia

♥ Poor nutrition
How Healthy are Your Heart Chambers?

Your heart's pumping function is measured by a number called the **EJECTION FRACTION (EF)**. This number shows the percentage of blood that is pumped out of your heart each time it beats. The ejection fraction does NOT measure the amount of heart muscle that is still working. A normal heart only pumps out about 50-65% of the blood inside itself. If your heart is damaged, the ejection fraction usually goes below 40%. This is called **SYSTOLIC** heart failure. However, you may have heart failure even if you have a normal ejection fraction. Sometimes the heart gets stiff and can’t relax enough to fill up with blood coming back from the body. This is called **DIASTOLIC** heart failure. Your doctor will inform you of your heart’s ejection fraction and what type of heart failure you have at your appointment.

**RIGHT SIDED** heart failure occurs when the right lower chamber (ventricle) has a pumping problem causing the blood to back up into the veins. You may have swelling in your legs, ankles and in your belly. **LEFT SIDED** heart failure causes the left lower chamber (ventricle) to have a pumping problem and makes fluid back up into the lungs. You may have trouble breathing, develop a cough or not be able to sleep without propping up on pillows to help you breathe. Some people have both kinds of heart failure.

**What is my Ejection Fraction? _________%**
Signs & Symptoms of Heart Failure

♥ Sudden, unexplained weight gain
♥ Shortness of breath, even with normal activities like talking, bending over to tie your shoes, brushing your teeth, or waking up breathless at night
♥ Swelling in your belly, legs or feet
♥ Unexplained weakness or fatigue
♥ Dry, hacking cough or occasional cough with white or pink sputum
♥ Loss of appetite or feeling full easily before finishing a meal
♥ Heart palpitations
♥ Dizziness or lightheadedness
♥ Irregular breathing during sleep (family members may notice new or loud snoring)

You or your family members may have noticed that you were having these symptoms before you were even diagnosed. It is very important that you understand the symptoms of heart failure so you can tell if you are improving, remaining stable, or getting worse. You know your body very well - sometimes just a very small change in your weight or energy level can be a sign of an upcoming flare-up or “exacerbation” of heart failure. If left untreated, those symptoms may get worse quickly. **Early detection and management of your symptoms will help you stay out of the hospital and improve your quality of life!**
Monitoring your Heart Failure Symptoms

Weigh yourself every day
and watch for swelling.

♥ Weigh every morning on the same scale, on a hard, stable surface, either without clothes or with similar clothing each day
♥ Weigh after urinating, but before eating or drinking
♥ Keep a written record of your weight and bring it with you to your appointments
♥ If you gain 2-3 pounds overnight or 5 pounds in a week, contact your doctor’s office
♥ Make sure you have a reliable scale to weigh on, even when you travel

Monitor your blood pressure

♥ Take your blood pressure (BP) a few times a week, especially on days that you may feel more heart failure symptoms. You can take your BP at different times of the day.
♥ Keep a record of your blood pressure readings and bring it with you to your office visits.
♥ You may bring your blood pressure monitor to compare it with the one at our office. The monitors won’t read exactly the same numbers but should be within the same range.
♥ Ask your doctor what your blood pressure goals are and when to notify your doctor if the BP blood pressure gets too high or too low.

The next page includes a chart that you can use to track your weight, BP, heart rate and heart failure symptoms!
Home Monitoring Log

Name: __________________________  Date of Birth: ____________

<table>
<thead>
<tr>
<th>Date</th>
<th>Weight</th>
<th>BP</th>
<th>Heart Rate</th>
<th>Heart Failure Symptoms (if any)</th>
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You can find more forms like this one in the back of this handbook.
Attention Family and Friends!

Sometimes it’s hard for patients to notice a change in their own symptoms. Here are some ideas that you can do to help your loved one monitor their symptoms:

♥ Tell the patient when you notice any different symptoms or symptoms that may be getting worse, even if you think they are small changes.
♥ Notify the patient if you notice they are more confused than usual or are getting more short of breath doing activities that they used to tolerate well.
♥ Help the patient weigh every day and keep a record of their weight. If the patient can’t call the doctor’s office, you can help report the weight gain.
♥ Notice how many pillows they sleep on at night to keep from being short of breath. Has the patient recently had to prop up on an extra pillow or two to sleep? Do they have to sit in the recliner to rest better? Do you hear them snoring more? Does the patient wake up in the middle of the night and sit on the side of the bed to take some deep breaths?

These changes may seem small, but notifying the patient’s health care team can help prevent a hospital stay!
Dietary Management in Heart Failure

“Nobody has ever measured, even poets, how much the heart can hold.”
~ Zelda Fitzgerald
### Reach a Healthy Weight

Being **overweight** increases the workload on your heart and lungs to supply oxygen to all areas of the body. By losing weight through proper diet and exercise, the body’s muscle mass is increased. This makes breathing easier and you will feel healthier and more energetic. To lose weight, choose foods low in calories and fat. This can be accomplished by cutting back on foods high in sugar like regular soda and on desserts that are high in fat, sugar, or both. Eat smaller amounts of foods at meals and eat healthier snacks. Choose low calorie foods such as vegetables and fruits. And increase your physical activity to burn more calories. You can use the chart below to find your BMI (Body Mass Index), to determine if you are overweight.

On the other hand, being **underweight** is a problem as well. Weight loss is a consequence of a combination of increased calorie needs and inadequate diet. As a result of poor diet the body’s muscle mass becomes depleted. The increased work of breathing creates a higher calorie need that the person may not be able to meet, and then a cycle of weight loss and muscle wasting is perpetuated. To gain weight, choose high calorie foods or supplements. Eat frequently throughout the day.

### Body Mass Index Table

<table>
<thead>
<tr>
<th>Height (inches)</th>
<th>Normal</th>
<th>Overweight</th>
<th>Obese</th>
<th>Extreme Obesity</th>
</tr>
</thead>
<tbody>
<tr>
<td>58</td>
<td>91</td>
<td>96</td>
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<td>156</td>
<td>190</td>
<td>366</td>
<td>493</td>
</tr>
</tbody>
</table>

Low-Sodium Diet

Now that you know how your heart works and why your body may retain extra fluid due to heart failure, it is important that you understand how to follow a low sodium diet. Sodium causes even more fluid to build up in your body and will make your heart work harder to pump the extra fluid. Even a small increase in your sodium intake can cause weight gain and extra swelling in your hands, feet, legs, and abdomen. When you have more swelling, you may also notice that it is harder for you to breath. Lowering the amount of sodium in your diet will help you feel healthier, make your medications work better, and can even help you stay out of the hospital!

How much sodium should you have?
A low-sodium diet means that you should have no more than 2000 milligrams of Sodium (mgs) each day. That includes all the sodium in your food AND the salt added to taste in your food.

Sodium is found in salt. Just 1 TEASPOON of salt contains 2300 mg. The typical American diet averages 6,000-8,000 mg a day.

Learning to live better with a low sodium diet
Reducing sodium intake may require some alterations in your present eating habits. These need not to be difficult or “tasteless”—the changes you are making now will expand your food choices, enhance the flavors of the food you currently enjoy, and enable you to practice nutritious, healthy eating habits. The major difference between a low-sodium diet and a “typical American diet” is that the former advocates fresh foods while the latter focuses on fast and convenience/processed foods. Most of our dietary sodium is from processed foods. Sodium is added to these foods to enhance taste or increase shelf-life. Processed foods as compared to fresh foods vary dramatically in sodium content.

Doesn’t salt make many foods taste better?
The desire for salt is an acquired taste. When you first begin to decrease salt, food may seem less tasty. Your taste buds will adjust after a few weeks.

<table>
<thead>
<tr>
<th>Where does the sodium come from?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naturally occurring in food</td>
</tr>
<tr>
<td>Added in cooking/table</td>
</tr>
<tr>
<td>Added during processing</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fresh vs. Processed Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheddar cheese, 1 oz.</td>
</tr>
<tr>
<td>Fresh</td>
</tr>
<tr>
<td>Cheese spread</td>
</tr>
<tr>
<td>Halibut, 3 oz.</td>
</tr>
<tr>
<td>Fresh, baked</td>
</tr>
<tr>
<td>Van deKamp’s battered</td>
</tr>
<tr>
<td>Corn, ½ cup</td>
</tr>
<tr>
<td>Fresh, cooked</td>
</tr>
<tr>
<td>Canned</td>
</tr>
<tr>
<td>Oatmeal, ¾ cup</td>
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<tr>
<td>Cooked, no added salt</td>
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<tr>
<td>Instant</td>
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<tr>
<td>Potato</td>
</tr>
<tr>
<td>Cooked, no added salt</td>
</tr>
<tr>
<td>Potatoes au Gratin</td>
</tr>
<tr>
<td>Chicken breast (no skin)</td>
</tr>
<tr>
<td>Home, no salt</td>
</tr>
<tr>
<td>KFC</td>
</tr>
<tr>
<td>Bread, 1 slice</td>
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<tr>
<td>KFC Biscuit</td>
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</table>
Steps to lower the sodium in your diet and help your heart stay healthy

Step 1: Stop adding salt to your food.
~ Make a commitment to your low sodium diet. Immediately remove all salt shakers from the table and near the stove. Fill your old salt shaker with an herb blend and keep it where you normally keep your salt shaker and use it in place of salt.
~ Eliminate added salt to the food you’re cooking, such as rice, pasta, or cereal.
~ Avoid using a salt-substitute or “lite” salt, which may contain potassium, which can be harmful if consumed in excess

Step 2: Choose foods that are naturally low in sodium
~ When making food choices, remember that FRESH IS ALWAYS BEST.
~ Use unprocessed foods as often as possible: unprocessed rice, pasta and grain products, fresh fruit and vegetables, and lean fresh meats.
~ Avoid canned foods, fast foods, salted meat (i.e. lunchmeat, sausage & bacon), and salted snacks (i.e. potato chips, pickles, pretzels).
~ Read Labels – There is hidden sodium in prepared sauces and condiments. Foods listing salt or sodium near the beginning of the ingredient list are high. Limit to 400mg per entrée and less than 200mg per side dish or snack.

Step 3: Change your favorite meals into low-sodium recipes
~ To modify a recipe, you must first identify the ingredients that contribute sodium, and then eliminate and/or use a substitute. For example, use freshly cooked chicken or turkey for sandwiches instead of packaged deli meats.
~ Choose herbs and spices to flavor foods instead of salt, experiment with new flavors.
~ Make your own salad dressings with oil, vinegar, garlic, herbs and spices.
~ Add a drop of lemon juice to the water when cooking pasta instead of salt. Sprinkle fresh lemon or lime juice on cooked rice, potatoes, vegetables, fish or chicken.
More tips to lower the sodium in your diet

~ Bring healthy snacks to events where high-sodium foods are usually offered, such as movie theaters or sporting events.

~ Keep a list of low-sodium foods in your kitchen and take it shopping with you.

~ When eating out in restaurants, avoid pre-prepared foods as much as possible. Ask the waiter for low-sodium choices or to inform the chef of your low sodium preference.

~ Ask for salad dressings and other sauces like steak, Hollandaise, Alfredo, creamed, cheesy, or marinara sauce to be “on the side.” If you barely dip your fork into the sauce before your main food item, you will still get the sauce’s flavor.

~ Choose the salad bar, but only choose the fresh vegetables. Avoid croutons, olives, pickles and creamy salad dressings.

~ Sodium in canned fish or vegetables can be reduced by 50% if the food is rinsed in running water for 2 minutes before using.

~ Not all sodium comes from the foods we eat. Softened water is high in sodium. Mouthwash, toothpaste, and medications often contain sodium; laxatives and antacid can be very high in sodium. Do not use baking soda as an antacid. Before you buy a medication ask your pharmacist if it is allowed on a low sodium diet.

~ To find out how much salt you’re eating, keep a written record for three to four days of everything you eat, including beverages and snacks. If you don’t know the amount of sodium content in certain foods, our dietitian can help you estimate the content and get a baseline of how much sodium you are already eating.

~ If you’re eating over 2000-3000 mg of sodium each day, look at your list of foods to see which items could be changed in the future to other low-salt choices.
# Food choices for a low-sodium diet

## Foods

### Shoes & Meat Substitutes

- Any fresh or frozen unbreaded beef, lamb, pork, poultry, fish, and seafood prepared without salt. (Choose lean cuts)
- Low sodium tuna and salmon
- Dried peas, beans lentils, & legumes
- Eggs and egg substitutes
- Tofu

### Foods to Avoid

- Any beef, fish, poultry or pork that is cured, salted, canned, koshered, smoked or dried (cold cuts, pepperoni, bologna, salami, pastrami, ham, bacon, hot dogs, sausage, chorizo, imitation seafood, corned/chipped/beef, jerky, Spam)
- Frozen breaded meats
  - chicken nuggets, fish sticks
- Regular canned tuna and salmon, sardines, anchovies, marinated herring, caviar, and pickled meats & Eggs
- Convenience foods (Pizza, pot pies, Hamburger Helper)

### Soups

- Homemade soup prepared without salt and low sodium broth and bouillon
- Low sodium bouillon, broth, canned and dehydrated soups

### Fats

- Low sodium salad dressing, gravies & sauces
- Vegetable Oil (Olive, canola)
- Sweet or unsalted butter or margarine

### Breads, Cereals, Potatoes & Starches

- English muffins, bagels, bread and low sodium bread
- Unsalted potatoes
- Unsalted rice, barley, noodles, pasta, grains-Unsalted pretzels, crackers, popcorn & chips
- Low sodium hot and cold cereals (puffed rice & wheat, shredded wheat)

### Milk & Milk Products

- Milk and milk drinks, yogurt
- Low sodium cheese
- Mozzarella, Swiss
- Extra low sodium cheese
  - Lacey Swiss

### Foods to Avoid

- Biscuits, pancakes, waffles, cornbread, quick breads, and self-rising flour
- Dry and instant potatoes
- Seasoned rice and pasta
  - (Rice-a-Roni, macaroni & cheese mixes)
- Commercial stuffing mixes-Coating mixes
  - Seasoned bread crumbs, Shake n’ Bake
- Salted snacks (Pretzels, crackers, popcorn, & chips)
- Instant Hot Cereal, some cold cereals (corn & wheat flakes)

- Salad Dressing, gravies, sauces & party dips
- Regular butter or margarine
- Bacon fat, salt pork
- Regular peanut butter and other nut butters
- Salted nuts

- Buttermilk, malted, chocolate milk, instant cocoa
- Hard cheese (Cheddar Blue cheese, parmesan)
- Cottage cheese
- Processed cheese (American, Velveeta, Nacho Cheese)
- Cheese spreads (Cheez Wiz, Easy Cheese, Pimento cheese)
## Food choices for a low-sodium diet continued

<table>
<thead>
<tr>
<th>Foods</th>
<th>Foods Recommended</th>
<th>Foods to Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beverages</strong></td>
<td>-Coffee, tea, herbal tea, decaffeinated coffee, soda, colas, lemonade, fruit juice, most mineral waters</td>
<td>-Gatorade, Tang, club soda, tonic water, softened water, (most sodas have less than 50 mg of sodium per serving and should be used in moderation)</td>
</tr>
<tr>
<td><strong>Vegetables</strong></td>
<td>-Any fresh, unsalted frozen, or low sodium canned vegetables-Low sodium tomato juice</td>
<td>-Regular canned vegetables and juices (tomato juice, V-8) -Any vegetables prepared with salt, bacon, ham, or salt pork -Frozen in sauces, frozen peas and lima beans -Pickled vegetables - Sauerkraut, pickles, relish, olives, pickled jalapenos, pepperoni</td>
</tr>
<tr>
<td><strong>Fruits</strong></td>
<td>-All fruit and fruit juices fresh, frozen, canned</td>
<td>-None</td>
</tr>
<tr>
<td><strong>Sweets &amp; Desserts</strong></td>
<td>-Sugar, maple syrup, honey, jelly, marmalade, jam, hard candies</td>
<td>-All candies made with sweet chocolate, nuts or coconut -Crust of pies -Bakery items and from mixes (doughnuts, cakes, brownies, cookies, instant pudding)</td>
</tr>
<tr>
<td><strong>Condiments, Seasonings &amp; Miscellaneous</strong></td>
<td>-Pepper, spices, vinegar and lemon juice -Low sodium catsup, mustard, fresh ground horseradish, fresh garlic -Fresh salsa, Low sodium tabasco -Leavening agents: yeast, cream of tartar, sodium-free baking powder</td>
<td>-Any seasoning made with salt including celery salt, onion salt, garlic salt, seasoned salt, sea salt, kosher salt, MSG, meat tenderizers, Kitchen Bouquet, barbeque sauce, soy sauce, horseradish, teriyaki sauce, steak sauce, fajita seas, Worcestershire sauce, Accent, meat extracts, tartar sauce -Regular catsup, mustard, chili sauce, canned salsas -Baking powder and baking soda</td>
</tr>
<tr>
<td><strong>Dining Out</strong></td>
<td><strong>Once every two weeks</strong></td>
<td></td>
</tr>
</tbody>
</table>
Flavoring without salt

- Use a light hand with seasonings. Just ¼ teaspoon of dried herbs or 1 teaspoon of fresh herbs is good to start for most recipes
- Use 3 times as much fresh herbs as dry herbs.
- Add ground herbs toward the end of cooking.
- Add whole spices at the beginning of cooking.

**Allspice** - fish, fruit, eggs, meats, peas, yellow squash  
**Almond Extract** - baked goods, fruits  
**Basil** - eggs, fish, meats, rice, vegetables, tomatoes  
**Bay Leaf** - fish, meats  
**Caraway Seeds** - baked goods, cheeses, cottage cheese, meats, rice, vegetables  
**Celery Powder or Seeds** - breads, meatloaf, salads, salad dressings, sauces, soups  
**Chili Powder** - cheese, chicken, corn, eggplant, eggs, meatloaf  
**Chives** - cottage cheese, eggs, salads, cucumbers, rice  
**Cinnamon** - baked goods, carrots, chicken, fruit, lamb, pork  
**Cloves** - baked goods, beets, carrots, fish, fruit, green beans, pot roast  
**Coriander** - (lemon-orange flavor) baked goods, cheese, meats, salads  
**Curry Powder** - cottage cheese, eggs, fish, fruits, meats, poultry, vegetables  
**Dill** - breads, cottage cheese, fish, meats, poultry, salads, green beans, cucumbers  
**Fennel Seeds** - (licorice-like flavor) apples, baked goods, beets, cabbage, cheese, eggs, pork  
**Garlic** - bread, fish, meats, poultry, salads, broccoli, asparagus  
**Ginger** - baked goods, fish, fruit, meats, poultry, vegetables  
**Green Pepper** - (fresh) meats, fish, eggs, rice, peas, potatoes  
**Horseradish Root** - meats, vegetables  
**Lemon Juice** - baked goods, fish, fruit, tea, vegetables, green beans, broccoli, asparagus  
**Mace** - (nutmeg-like flavor) baked goods, fish, fruits, poultry, vegetables, potatoes  
**Marjoram** - (sage-like flavor) breads, chicken, eggs, fish, green salads, meats, vegetables  
**Mint** - cabbage, carrots, desserts, lamb, sherbet, tea, vegetables, peas  
**Mushrooms** - (fresh) chicken, peas  
**Mustard Powder or Seeds** - cheese, eggs, meats, poultry, vegetables  
**Nutmeg** - baked goods, chicken, desserts, eggs, fruit, vegetables, green beans  
**Onions** - (fresh) meats, eggs, rice, vegetables, potatoes, cucumbers  
**Onion Powder** - bread, cheese, eggs, fish, meats, poultry, rice, salads, vegetables  
**Oregano** - cheese, tomatoes, eggs  
**Paprika** - cheese, eggs, fish, meats, poultry, vegetables, potatoes  
**Parsley** - breads, eggs, fish, meats, poultry, salads, potatoes, peas  
**Pepper** - eggs, fish, meats, poultry, vegetables, greens  
**Rosemary** - breads, cauliflower, eggs, fish, meats, poultry, turnips  
**Saffron** - breads, chicken, eggs, fish, rice, veal  
**Sage** - Brussels sprouts, carrots, cheese, eggplant, fish, meats, onions, peas, poultry, pork  
**Savory** - (sage-like flavor) eggs, meats, poultry, rice, salads, vegetables  
**Tarragon** - (licorice-like flavor) eggs, fish, meats, poultry, vegetables  
**Thyme** - (clove-like flavor) cheese, eggs, fish, meats, poultry, vegetables  
**Turmeric** - eggs, fish, rice, salads, vegetables  
**Vinegar** - meat marinades, salads, vegetables, greens, cucumber, asparagus

*Season-All Blend* - 1 tsp of each basil, mace, marjoram, cloves, thyme, black pepper, oregano, & savory, ¼ tsp cayenne  
*Herbed Seasoning Blend* - 2 Tbsp dill or basil & onion powder, 1 tsp oregano & celery seed  
¼ tsp dried grated lemon peel, 1/16 tsp black pepper  
*All-Purpose Spice Blend* - 5 tsp onion powder, 2-½ tsp of each paprika, garlic powder, & Mustard, 1-¼ tsp thyme, ½ tsp white pepper, ¼ tsp celery seed  
*Spicy Flavor Blend* - 2 Tbsp savory, 1 Tbsp mustard, 2-½ tsp onion powder, 1-½ tsp curry powder, 1-¼ tsp cumin & white pepper, ½ tsp garlic powder
Shopping Guide for Low Sodium Eating

The first rule of shopping for a nutritious, healthy, and low-sodium diet is **fresh is best**.

**Food Labels** - Reading labels is a key factor in identifying and limiting the sodium sources in your diet. Food labels list ingredients in order of weight. This can be misleading when sodium appears at or near the end of the list. For example, although salt is the last ingredient listed for a McDonald’s quarter pounder with cheese, and only 0.65% of the total weight is salt, that low percentage of weight is actually 1,236 mg of sodium!

Sodium can appear on labels in various “disguises”. There are many sodium containing food additives that are used to retain taste, color or lengthen the shelf life of a product. The words soda or sodium or the symbol Na in their names indicate that the product contains sodium in some form.

1. Look at serving size

2. Look at sodium

### Sodium claims

- **Low Sodium** - no more than 140 mg of sodium per serving
- **Very low sodium** - no more than 35 mg of sodium per serving
- **Sodium-free** - less than 5 mg of sodium per serving
- **Reduced sodium** - sodium has been reduced by 75%
- **Unsalted, No salt** - foods were processed without salt

| Nutrition Facts |
|-----------------|----------------|
| Serving Size    | 1 cup          |
| Servings Per Container | 2              |
| Amount Per Serving |               |
| Calories        | 170            |
| Calories from Fat | 15             |
| % Daily Value*  |                |
| Total Fat       | 1.5g           |
| Saturated Fat   | 0g             |
| Cholesterol     | 0mg            |
| Sodium          | 890mg          |
| Total Carbohydrate | 34g            |
| Dietary Fiber   | 1g             |
| Sugars          | 1g             |
| Protein         | 3g             |
| Vitamin A       | 0%             |
| Vitamin C       | 0%             |
| Calcium         | 0%             |
| Iron            | 15%            |

*Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

The FDA and the USDA require that sodium claims on food labels meet the above standards. In selecting foods that are advertised as being low in sodium, be aware of the above definitions and choose those foods that are labeled low, very low, or sodium-free. When picking foods labeled “reduced” sodium, keep in mind that the reduction is 75% of what the product previously contained. If it was excessive to begin with, the remaining 25% may still be high as compared to other brands or similar products. The last category “unsalted” simply indicates that salt is not added when the food is processed; the food itself may still contain sodium. Be sure to check both the amount of sodium per serving and the indicated serving size.
Dining Out on a Low-Sodium Diet

Because you have less control of the sodium content of foods when you are not at home, you should cut back on sodium as much as possible at those meals you can control on days when you know you will be eating away from home. Choose restaurants that will prepare foods without salt, don’t be afraid to ask your waiter or waitress that your food be prepared without salt and that you are on a low sodium diet – you are worth it! *Ask for gravy, sauce or dressing on the side. If it tastes salty, do not eat it, or only use a small amount.

**Appetizers**
- Try a raw vegetable or fruit platter with a small amount of dip
- Shrimp are low in sodium. Use these with just a small amount of sauce
- Avoid chips, cheese, and pickled food

**Soups/ Salads**
- Gelatin salads are usually low in sodium
- Avoid salads containing cheese and cottage cheese
- Use lemon or oil & vinegar on salad (or dressing on the side)
- Soup is generally high in sodium and should be avoided
- Avoid bacon, croutons, pickles, olives and anchovies

**Breads**
- Most breads contain sodium and it is best to limit yourself to one serving
- Avoid crackers and bread sticks

**Vegetables**
- Order fresh vegetables whenever possible
- A baked potato is a good choice (but be selective in toppings)
- Ask for a lemon wedge to season vegetables
- Avoid vegetables with sauces or in casseroles

**Entrees**
- Request that the food be prepared without salt
- Remove breading, topping or sauce from an entrée it is included
- Choose broiled, grilled, baked or roast meats
- Skip marinated or barbecued meats
- Avoid cheese sauces and dishes
- Casserole- type dishes are often high in sodium—skip them.
- Ask that Oriental dishes be prepared without salt, MSG or soy sauce

**Desserts**
- If a fruit pie is served, eat only the filling and leave the crust
- Choose fresh fruit, sorbet, gelatins, sherbet or ice cream
- Avoid ice milk or soft- serve ice cream
- Avoid any dessert made from a mix

**Carry-Out Meals**
- Select menu items such as poached chicken breast or fish, or steamed vegetables
- Select lemon juice rather than gravy
- Keep low-sodium dessert (fresh fruits, frozen ices and sorbets) at home so that you will not be tempted by high sodium carry out delicacies
**Fast Foods**
- It is difficult to find low sodium items in fast food restaurants
- The salad bar is a good place to begin your fast-food meal (keeping in mind that salad dressings can be high in sodium and should be used sparingly)
- Choose a baked potato with yogurt topping
- Choose simply prepared items, such as a regular size broiled hamburger (2 ounces) on a bun with lettuce, tomato and onion
- Skip the cheese on your hamburger, and condiments – relish, ketchup, and mustard
- For breakfast, try a toasted bagel, whole-grain roll or muffin or cereal. Choose these in place of sausage, bacon or biscuits.

**Salad Bars**
- Choose generous portions of fresh vegetables
- Avoid cheese, pre-made salad, bacon, pickles, olives, seasoned croutons
- Try a squeeze of lemon or vinegar and oil on your salad instead of dressing

**Specialty Cuisines**

**Chinese**
- Choose foods that are boiled, steamed, broiled or lightly stir-fried in vegetable oil, not pickled.
- Ask that salty sauces, such as soy, be served on the side and that MSG and salt be eliminated in the preparation.
- Enjoy the steamed rice

**Delicatessen Foods**
- Request “fresh-cooked” meats. Avoid processed meats including corned beef, pastrami, bologna, salami and cold cuts
- Use minimal amounts of mayonnaise, mustard and catsup
- Order lettuce, tomato, sprouts and/or onion
- Use just one slice of bread
- Avoid pasta salads
- Avoid the accompanying pickle and chips

**French**
- Steamed mussels or a salad (with dressing on the side) are fine starters
- Ask if your entrée is sauced and how that sauce is prepared. If possible, order the sauce on the side
- Choose items prepared in the style of Provencal cooking, from southern France, with tomatoes, garlic, olive oil, and herbes de Provence (rosemary, thyme and basil). These dishes usually feature fish and a variety of vegetables
- Avoid the black olives, capers and anchovies frequently found in this cuisine

**Greek**
- Try tzatziki, an appetizer made with yogurt and cucumbers
- Greek salads are filling and delicious. Order cheese, anchovies, olives and dressing on the side and use them sparingly
- For a main course, try plaki, fish cooked with tomatoes, onions and garlic
- Avoid entrees made with cheese, anchovies or olives
- Try shish kabob, broiled on a spit, made with lamb, tomatoes, onion and peppers
- Have rice with your entrée
Indian
- Enjoy the salads, often a combination of yogurt with chopped or shredded vegetables (raita)
- Try tandoori chicken and fish, marinated in Indian spices, roast in a clay pot
- Vegetables are an important part of Indian meals. Lentils, a staple, are high in protein and fiber, and low in sodium if prepared without salt.

Italian
- Linguini with white or red sauce is a good choice
- Avoid pasta filled with cheese
- Try pasta primavera; it’s prepared with a little oil and fresh vegetables
- Resist sprinkling on extra Parmesan cheese. It’s high in sodium.
- Order a past appetizer as your entrée; they’re often large enough to be a meal
- Italian ices are excellent dessert choices

Japanese
- Select foods described as “yakimono” which means broiled
- Dishes that feature tofu are low in sodium
- Steamed rice makes a good accompaniment
- Avoid dishes using miso which is extremely high in sodium

Mexican
- Choose tortillas made with corn rather than flour
- Try shrimp or chicken items
- Rice and beans are low is sodium if prepared without salt
- If you choose an item made with cheese, ask to have the cheese omitted

Middle Eastern
- Try making a meal form the wide choice of appetizers on the menu
- Shish kebab is a good entrée choice
- For a vegetarian entrée, try couscous or steamed bulgur topped with vegetables. Ask that it be prepared without salt
- Fresh fruits are recommended for dessert

Regional Americana
- Look for fresh herbs, low fat dairy products, lean meats, farm- raised game, whole grain breads, seasonal fruits and vegetables and smaller portions
- Avoid fried foods such as fried chicken, chicken fried steak, gravies. All may be prepared with salt
- Many dessert items, such as cream pies and spoon bread, are high in sodium
- Select ice cream or fresh fruit for dessert

Southeast Asian
- Grilled beef or pork with satay or lemon grass are good entrée choices
- Special salads combine shredded cabbage, chicken, pork or shrimp with the traditional spices (cumin, turmeric, coriander) and peppers
- Avoid pickled foods or dishes
- Try dishes that have been lightly stir-fried with fresh vegetables and small amounts of meat, shrimp or steamed fish
- Choose fresh tropical fruit for dessert

Steak/Seafood
- Order beef broiled without added salt
- Have a baked potato plain or with a little margarine, sour cream or yogurt
- Avoid cottage cheese
- Enjoy a green salad with the dressing served on the side
- Try steamed fresh vegetables
- Meat and seafood sauces, such as steak sauce and tarter sauce can contain high amounts of sodium. Avoid their use.
### Low-Sodium Menus

#### Breakfast – 137 mg
- Oatmeal (regular, no salt), 1 cup: 1
- Grape juice, ½ cup: 5
- Milk, skim, 1 cup: 126
- Coffee with sugar, 1 cup: 5

#### Lunch – 761 mg
- Sandwich
  - Whole wheat bread, 2 slices: 296
  - Chicken, white meat, 3 ounces: 68
  - Lettuce, tomato, 2 slice/piece: 8
  - Mayonnaise, 1 tablespoon: 80
  - Mustard, 1 tablespoon: 88
  - Apple: 1
  - Chips ahoy ch chip cookies, 3: 110
  - Iced tea, 1 cup: 10

#### Dinner – 242 mg
- Salmon, baked, 3.5 ounces: 45
- Baked potato, 1: 6
- Sour cream, 1 tablespoon: 6
- Margarine, unsalted, 2 tablespoon: 4
- Asparagus, 1/2 cup, (6 spears): 4
- Carrots, 1/2 cup: 51
- Skim milk, 1 cup: 126
- Peach: 1

#### Snack – 120 mg
- Banana: 1
- Graham crackers, 2 squares: 74
- Jell-O, 3.5 ounce container: 45

**TOTAL 1,260 mg SODIUM**

#### Breakfast – 449 mg
- Waffles (Special K) topped with
  - Blueberries, ½ cup: 5
  - Butter, unsalted, 2 tablespoon: 4
  - Syrup, 2 Tablespoon: 34
  - Milk, skim, 1 cup: 126
  - Hot tea, 1 cup: 10

#### Lunch – 831 mg
- Sandwich
  - Whole wheat bread, 2 slices: 296
  - Tuna fish, ¾ cup: 287
  - Mayonnaise, 1 tablespoon: 80
  - Lettuce, tomato, 2 slices: 8
  - Pear: 1
  - Animal crackers, 10 cookies: 100
  - Carrots, raw, 1 cup: 50
  - Iced tea, 1 cup: 10

#### Dinner – 497 mg
- Sirloin steak, 4 ounces: 70
- Mashed potatoes
  - (homemade no salt), ½ cup: 25
  - Gravy (homemade no salt), ¼ cup: 25
  - Green beans, 1/2 cup: 2
- Summer squash, 1/2 cup: 3
- Dinner roll, 1: 148
  - Butter, unsalted, 2 tablespoons: 4
  - Lemon meringue pie
    - (Mrs. Smith’s), 1 slice: 220

#### Snack – 65 mg
- Frosted mini- wheats, 1 cup: 2
- Skim milk, ½ cup: 63

**TOTAL 1,842 mg SODIUM**
<table>
<thead>
<tr>
<th>Menu</th>
<th>Sodium Level</th>
<th>Item Description</th>
<th>Sodium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>584 mg</td>
<td>Eggs, 2</td>
<td>124</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Bacon, low sodium, 2 slices</td>
<td>175</td>
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<tr>
<td></td>
<td></td>
<td>Toast, 1 slice</td>
<td>148</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Butter, unsalted, 1 tablespoon</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Milk, skim, 1 cup</td>
<td>126</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mango, 1 medium</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Coffee, 1 cup</td>
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<tr>
<td>Lunch</td>
<td>615 mg</td>
<td>Sandwich</td>
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<td></td>
<td></td>
<td>Turkey, low sodium, 3 oz</td>
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<tr>
<td></td>
<td></td>
<td>Whole wheat bread, 2 slices</td>
<td>296</td>
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<tr>
<td></td>
<td></td>
<td>Lettuce, tomato, 2 slices</td>
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<tr>
<td></td>
<td></td>
<td>Mayonnaise, 1 tablespoon</td>
<td>80</td>
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<td></td>
<td></td>
<td>Mustard, ½ tablespoon</td>
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<tr>
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<td>Grapes, 1 cup</td>
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<td></td>
<td></td>
<td>Vanilla wafers, 4</td>
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<td>Iced tea, 1 cup</td>
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<tr>
<td>Dinner</td>
<td>464 mg</td>
<td>Meatballs (made without salt), 4 oz</td>
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<td></td>
<td>Pasta, 1 cup</td>
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<tr>
<td></td>
<td></td>
<td>Green salad, 2 cup</td>
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<tr>
<td></td>
<td></td>
<td>Croutons (unseasoned), ¼ cup</td>
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<tr>
<td></td>
<td></td>
<td>Italian salad dressing, 2 tablespoons</td>
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<tr>
<td></td>
<td></td>
<td>Zucchini, ½ cup</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cantaloupe, 1 cup</td>
<td>54</td>
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<tr>
<td>Snack</td>
<td>300 mg</td>
<td>Yogurt, fruit flavored, 6 ounces</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grape nuts cereal, ¼ cup</td>
<td>175</td>
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</tbody>
</table>

**TOTAL 1,963 mg SODIUM**

<table>
<thead>
<tr>
<th>Menu</th>
<th>Sodium Level</th>
<th>Item Description</th>
<th>Sodium (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breakfast</td>
<td>341 mg</td>
<td>Oatmeal raisin crisp cereal, 1 cup</td>
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<tr>
<td></td>
<td></td>
<td>Milk, skim, 1 cup</td>
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<td></td>
<td></td>
<td>Grapefruit, pink, ½</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Hot tea, 1 cup</td>
<td>5</td>
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<tr>
<td>Lunch</td>
<td>1,025 mg</td>
<td>Roast beef sandwich, Subway, 6 in</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Chocolate chip cookie, 1</td>
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<td></td>
<td></td>
<td>Iced tea, 2 cups</td>
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<tr>
<td>Dinner</td>
<td>129 mg</td>
<td>Pork chop, 4 ounces</td>
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<tr>
<td></td>
<td></td>
<td>Rice, white long grain, 1 cup</td>
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<tr>
<td></td>
<td></td>
<td>Cabbage, ½ cup</td>
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<tr>
<td></td>
<td></td>
<td>Chinese mixed vegetables, ½ cup</td>
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<tr>
<td></td>
<td></td>
<td>Fruit cocktail, 1 cup</td>
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<tr>
<td>Snack</td>
<td>344 mg</td>
<td>Skim milk, 1 cup</td>
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<tr>
<td></td>
<td></td>
<td>Angel food cake, 1/12 cake</td>
<td>212</td>
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<tr>
<td></td>
<td></td>
<td>Strawberries, 1 cup</td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Cool whip, 2 tablespoons</td>
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**TOTAL 1,839 mg SODIUM**

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<th>Sodium Level</th>
<th>Item Description</th>
<th>Sodium (mg)</th>
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<tbody>
<tr>
<td>Breakfast</td>
<td>300 mg</td>
<td>Yogurt, fruit flavored, 6 ounces</td>
<td>125</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grape nuts cereal, ¼ cup</td>
<td>175</td>
</tr>
</tbody>
</table>

**TOTAL 1,963 mg SODIUM**
## Sodium Content of Specific Foods

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Sodium Content (mg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salt, 1 Tbsp</td>
<td>6900 mg</td>
</tr>
<tr>
<td>Salt, 1 Tsp</td>
<td>2300 mg</td>
</tr>
<tr>
<td>Most frozen dinners</td>
<td>1000-1200+</td>
</tr>
<tr>
<td>Pot pies</td>
<td>800-1000 mg</td>
</tr>
<tr>
<td>Baking soda, 1 tsp</td>
<td>1000 mg</td>
</tr>
<tr>
<td>Baking powder, 1 tsp</td>
<td>775 mg</td>
</tr>
<tr>
<td>Broth, made from cube, 1 C</td>
<td>900 mg</td>
</tr>
<tr>
<td>Olives, 10 jumbo</td>
<td>820 mg</td>
</tr>
<tr>
<td>Vegetable soup, can, 1 C</td>
<td>823 mg</td>
</tr>
<tr>
<td>MSG, 1 tsp</td>
<td>750 mg</td>
</tr>
<tr>
<td>Tomato Sauce, 1 Cup</td>
<td>738 mg</td>
</tr>
<tr>
<td>Tomato Juice, 1 Cup</td>
<td>877 mg</td>
</tr>
<tr>
<td>Soy Sauce, 1 Tbsp</td>
<td>800-900 mg</td>
</tr>
<tr>
<td>Teriyaki Sauce, 1 Tbsp</td>
<td>690 mg</td>
</tr>
<tr>
<td>Worcestershire sauce, 1 Tbsp</td>
<td>234 mg</td>
</tr>
<tr>
<td>Tomato Catsup, 1 Tbsp</td>
<td>150-177 mg</td>
</tr>
<tr>
<td>Italian Salad Dressing, 1 Tbsp</td>
<td>115 mg</td>
</tr>
<tr>
<td>Baked beans, 1 C</td>
<td>1008 mg</td>
</tr>
<tr>
<td>Navy Beans, canned, ½ C</td>
<td>586 mg</td>
</tr>
<tr>
<td>Pudding, Instant ½ C</td>
<td>400-800 mg</td>
</tr>
<tr>
<td>Pudding, homemade, ½ C</td>
<td>230 mg</td>
</tr>
<tr>
<td>Chips, Potato, 1 oz</td>
<td>220 mg</td>
</tr>
<tr>
<td>Instant mashed potatoes</td>
<td>270-380 mg</td>
</tr>
<tr>
<td>Pancake, waffle, 1-4 in</td>
<td>220-350 mg</td>
</tr>
<tr>
<td>Tortilla, flour 1-4 in</td>
<td>175 mg</td>
</tr>
<tr>
<td>Tortilla, corn, 1-4 in</td>
<td>50 mg</td>
</tr>
<tr>
<td>Gatorade, 12 oz</td>
<td>220 mg</td>
</tr>
<tr>
<td>Club soda, 12 oz</td>
<td>75 mg</td>
</tr>
<tr>
<td>Milk and yogurt contain 140-160 mg per cup</td>
<td></td>
</tr>
<tr>
<td>Breads range from 100-200 mg per slice</td>
<td></td>
</tr>
</tbody>
</table>
This is a chart that you may use to record your daily sodium intake and determine what changes you will need to make to stay compliant with the low-sodium diet your doctor recommends. After reviewing your sodium intake over three days, what changes can you make to lower the salt in your diet?

Our dietitian would be happy to provide you with more information regarding your diet. Feel free to request a consultation through the Heart Clinic and you will be referred to a dietitian for an appointment.

Additional copies of this chart can be found in the back of this handbook.
Diet for Potassium Intake

Some heart failure medications make your potassium levels go too low or even too high. Your heart failure team will need to tell you if you should avoid or increase your intake of high-potassium foods. You may even have to take a potassium pill that is prescribed; if this happens, only take the prescribed version of the potassium – NOT an “over-the-counter” version. Here is a list of foods that are high in potassium. Use the list to know which foods to avoid OR to add to your diet, depending on what your health care provider tells you about your current potassium level and medications.

### Vegetables

#### LOW
- Beans-Green, Wax
- Beets
- Cabbage
- Carrots
- Cauliflower
- Celery, raw
- Corn
- Cucumber
- Eggplant
- Green Peas
- Green Pepper
- Lettuce
- Mushrooms (Raw)
- Okra
- Onion
- Radishes
- Squash - Summer or Zucchini

#### HIGH
- Artichokes
- Asparagus
- Avocado, Guacamole
- Beans - Black, Black-eyed, Chickpeas, Kidney, Lentil, Navy, Pinto, Red, Soybeans
- Broccoli
- Brussels Sprouts
- Greens - Spinach, Collard, Mustard, Beet, etc
- Nopales
- Mushroom (Canned)
- Peas, Snow Peas
- Potatoes – Chips, French Fried, hash browned
- Squash - Acorn, Butternut, Hubbard, Winter
- Sweet Potatoes
- Tomatoes, Tomato Juice, V-8

### Fruits & Juices

#### LOW
- Apple, Apple Juice, Applesauce
- Blueberries, Strawberries, Raspberries
- Cherries
- Cranberries, Cranberry Juice
- Fruit Cocktail
- Grapes, Grape Juice
- Lemon & Lime Lemonade
- Mandarin Oranges
- Pears, Pear Nectar
- Pineapple
- Watermelon
- Tangerine

#### HIGH
- Apricot, Apricot Nectar
- Banana
- Cantaloupe, Honeydew Melon
- Dried Fruit – Dates, Raisins, Figs, Apricots, Tamarinds
- Guava
- Kiwi Fruit
- Nectarine
- Mango
- Orange, Orange Juice
- Peaches
- Papaya
- Plum
- Prunes, Prune Juice

*Very High Choice  ^Very Low Choice

Almost all foods contain potassium. A large portion of a low potassium food can turn into a high potassium food.
Alcohol Use

Alcohol slows the ability to pump well and can contribute to heart failure symptoms, even if it’s used in small amounts over a long period of time. Drinking alcohol can also interfere with the absorption of your medications. Beverages such as beer contain a lot of sodium which can make your swelling and heart failure symptoms worse. Drinking a lot of alcohol can also increase your triglyceride levels and can worsen high blood pressure. Additionally, too much alcohol consumption can cause depression or make existing depression even worse. Patients who take aspirin should avoid alcohol to prevent serious adverse effects when these are combined.

You may have heard that red wine can help your heart’s health. However, since you already have heart failure, the wine cannot reverse the damage to your heart so we do not recommend that you start consuming wine. If you currently drink any alcohol, please notify your doctor of what type, amount and frequency you consume so recommendations can be made for you during your next clinic visit.
Fluid and Heart Failure

Fluids help keep your body hydrated. Drink at least 8 cups of caffeine-free fluid daily, unless your doctor has placed you on a fluid restriction. A fluid restriction helps to protect against fluid build-up in your body. Exceeding your limit may cause swelling in the feet, ankles, legs, and hands, high blood pressure, shortness of breath, and enlargement of the heart.

*Your fluid allowance is _____ cups or _____ ounces or _____ cc per 24 hours.*

Fluid is anything, which will melt at room temperature. Items that are counted as fluid are:

- Water
- Popsicles
- Juice
- Milk
- Tea
- Ice Cream
- Coffee
- Punch
- Sodas
- Ice
- Soup
- Jell-O

**How to Quench Your Thirst**

- Try a lemon wedge to stimulate saliva and moisten a dry mouth
- Use sour or tart hard candies or chewing gum to moisten your mouth.
- Rinse your mouth with water or mouthwash without swallowing.
- Try eating fruits (which are allowed in your diet) ice cold between meals.
- Brush your teeth more frequently.
- Eat an ice cube made with lemon juice which provides refreshment. Remember that ice cubes will count as part of your fluid allowance.

**Helpful Hints for Fluid Restriction**

1. Avoid high sodium foods. When you consume salty foods your bloodstream becomes more concentrated in sodium that triggers your thirst mechanism.
2. Often the sense of thirst is actually the feeling of having a dry mouth and food (such as bread with margarine & jelly) may alleviate this sensation.
3. Drink only when thirsty and not from habit. Try to keep yourself busy to reduce any desire or preoccupation for liquids.
4. Take medications with meal-time fluids.
5. Use small glasses for beverages such as juice glasses instead of tumblers.
6. Use tea or coffee cups not coffee mugs for hot beverages and fill them ½ full.
7. Every morning measure your daily fluid allowance in water in a container. Every time you have some type of liquid pour the same amount out of the container. The amount of water left in the container will indicate how much of your daily allowance remains. When the container is empty, you have consumed all of your daily allowance.
Heart Failure Medications

“The best and most beautiful things in the world cannot be seen or even touched. They must be felt by the heart.”
~ Helen Keller
Medications

One of the most important things you can do to manage your heart failure is to take your medications as prescribed. Research shows that heart failure medications can help you live longer, breathe easier, increase your energy, notice less swelling and stay out of the hospital. You will likely have to take several medications and some doses will be increased even if you’re feeling better. That’s because most heart failure medicines work best at certain doses, so your heart failure team will try to “maximize your medications” during each clinic visit. This means that we want each of the drugs to give you the maximum amount of benefit it possibly can without causing side effects. Here are some tips to remember about taking your medications properly. The next section of this chapter will review the different types of heart failure medications.

♥ Since you’ll have several drug bottles to keep up with, you may want to purchase a pillbox marked with each day of the week and times of day you’ll be taking the medicine. Have a family member help or ask your nurse to help arrange your pillbox for you if needed. Some patients even make their own charts to keep up with their medication schedule.

♥ Always take your medications and any charts or pillboxes you may be using to each Heart Clinic visit so our staff can help review the drugs and make sure you are on the correct medicine, doses, and schedule.

♥ Always bring your medication list if you come to the emergency room or hospital.

♥ If you are having trouble paying for your medicines, please ask to visit with our social worker to discuss possible additional resources. Don’t ever run out of medicine or try to use the drugs sparingly on a different schedule just to prevent having to buy the medication.

♥ It is very important not to miss doses or alter the doses from the way your medications are prescribed. Carry your medicines when you leave home so you can still take them on time.

♥ If you travel on a plane, make sure the drug bottles are in your carry-on baggage rather than possibly losing them if your checked luggage gets lost or delayed. Make sure the bottles are properly labeled with your name and have the correct medication in each bottle.
Types of Heart Failure Medications

Each type, or “class”, of HF medication is summarized below. However, the following information is not all-inclusive with each drug’s full prescribing information. Ask your health care provider or pharmacist for additional information. **Contact your doctor with any side effects or reactions you develop.**

Angiotensin Converting Enzyme (ACE) Inhibitors

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Trade Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accupril</td>
<td>Quinipril</td>
</tr>
<tr>
<td>Aceon</td>
<td>Perindopril</td>
</tr>
<tr>
<td>Altace</td>
<td>Ramipril</td>
</tr>
<tr>
<td>Capoten</td>
<td>Captopril</td>
</tr>
<tr>
<td>Mavik</td>
<td>Trandolapril</td>
</tr>
<tr>
<td>Monopril</td>
<td>Fosinopril</td>
</tr>
<tr>
<td>Prinivil</td>
<td>Lisinopril</td>
</tr>
<tr>
<td>Zestril</td>
<td></td>
</tr>
<tr>
<td>Vasotec</td>
<td>Enalapril</td>
</tr>
</tbody>
</table>

Angiotensin Converting Enzyme (ACE) Inhibitors block the effect of a stress hormone called “angiotensin”. These medications can help improve your heart failure symptoms, prevent HF from worsening, and help you be more active. They control your blood pressure and can help HF symptoms even if you don’t have hypertension (high blood pressure). It’s best to take this medicine spaced out a few hours from your other blood pressure medications to avoid side effects. We recommend taking it around lunch or bedtime. ACE Inhibitors can cause the body to retain potassium, so avoid salt-substitutes and high potassium foods as we described earlier. Also avoid non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen (Motrin®, Advil®) or naproxen sodium (Aleve®) because these drugs can cause the body to retain sodium and water, which will decrease the effect of ACE Inhibitors.

**Common Side Effects:** Swelling of your lips, tongue, neck, and/or face. **CONTACT YOUR DOCTOR IMMEDIATELY IF THIS OCCURS!** Red, itchy skin; dizziness or lightheadness when you get out of bed or rise from a chair too fast; persistent dry cough; salty or metallic taste; sore throat; fever; mouth sores; unusual bruising; chest pain; swelling of your extremities; low blood pressure; hyperkalemia (high potassium); and altered kidney function.
Beta-Adrenergic Blockers (Beta-Blockers)

Beta-blockers help the heart to relax and lower the production of stress hormones in the body that respond to heart failure. These drugs make your heart beat slower and can improve the heart’s pumping ability over time. Beta-blockers can also help lower your blood pressure, prevent heart attacks, and keep your heart in a healthy rhythm. These medications should always be taken with meals, typically at breakfast and dinner, to avoid serious side effects. You will probably be started on a low dose at first and it will be increased up until you are at the right “maximum” dose that you are able to tolerate. Sometimes, it may take a while for patients to feel better on beta-blockers and some people may even feel more tired or dizzy at first. However, most patients feel much better after a few weeks and notice that their energy level improves over how they felt before starting the beta-blocker.

**Common Side Effects:** Dizziness or lightheadness; sudden weight gain, wheezing or shortness of breath; slow or irregular heart beat; chest pain (notify your doctor if one or more of these occur!); nausea, diarrhea, constipation or gas; cold extremities; headache; difficulty sleeping, heartburn, and nightmares.

**Digoxin**

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Trade Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lanoxin</td>
<td>Digoxin</td>
</tr>
</tbody>
</table>

Digoxin can strengthen your heart muscle and contractions, restore a steady heart rhythm, and improve circulation. Studies show that patients on digoxin have fewer symptoms and go to the hospital less frequently if they have heart failure. Patients take digoxin once a day at the same time every day. This medicine can slow the heart rate, so your health care provider may need you to keep a record of your pulse (heart rate). You may also have occasional blood tests to check the level of digoxin in your bloodstream. Other medications can interact with digoxin, such as antacids, asthma medicine, cold/sinus drugs, laxatives, anti-diarrheals, and other diet medications.

**Common Side Effects:** Changes in vision (blurriness, different colors – seeing yellow or green, seeing halos or borders around objects, flashes of light, sensitivity to light); loss of appetite, nausea and vomiting; abnormal heart rhythms, palpitations; drowsiness; headache; confusion; depression; fatigue; and muscle weakness.
Diuretics are also known as “water pills” because they cause the kidneys to get rid of excessive water and salt from your body. Getting rid of this extra fluid decreases your swelling, makes it easier for you to breathe, and lets your heart pump easier. If you only take a single daily dose, take your diuretic in the morning with breakfast. If you take more than one dose, take the last dose around 4:00 p.m. to prevent having to get up and urinate a lot during the night. Make sure you weigh every morning as discussed earlier and call your health care provider if you gain 2-3 pounds overnight or 5 pounds in a week. Sometimes, diuretics cause people to lose potassium through their urine. You need the right amount of potassium to make sure your heart rhythm stays normal. If you are on a diuretic, you may need to be on a prescribed potassium pill and have your blood monitored periodically to make sure your potassium level is normal.

**Common Side Effects:** Dehydration (signs of this include dizziness, decreased urine output, dark-colored urine, extreme thirst and dry mouth); frequent urination and thirst; muscle cramps; dizziness; ringing in the ears; loss of appetite, nausea, vomiting; headache; blurred vision; fever; sore throat; unusual bleeding/bruising; rapid and excessive weight loss; and skin rash.

### Aldosterone Antagonists

Aldosterone Antagonists block the effects of a stress hormone that makes heart failure worse. They also help the kidneys get rid of extra water and salt from your body. These medications sometimes make the body actually retain potassium, so you will need periodic blood testing of your potassium levels. Also, avoid high-potassium foods as listed earlier in this manual. Take this medication in the morning with breakfast.

**Common Side Effects:** Hyperkalemia (high potassium); breast enlargement or tenderness—especially in men; fatigue; increased urination; nausea; skin rash or itching; irregular heartbeat; confusion; nervousness; numbness or tingling of the hands, feet or lips; and shortness of breath.
Angiotensin Receptor Blockers (ARBs)

Angiotensin Receptor Blockers (ARBs) are used less frequently in patients with heart failure, but may be recommended for people who can’t take an ACE Inhibitor due to side effects. ARBs block the effect of stress hormones that cause narrowing of blood vessels in your body. By taking an ARB, your blood vessels relax and your heart doesn’t have to pump as hard. As with ACE Inhibitors, we recommend you take your ARB spaced out from your other blood pressure medications, especially your Beta-Blocker. Usually, patients take their ARB at lunch or at bedtime. As with other heart failure medications, patients on ARBs will need their kidney function and potassium checked by having periodic labs.

**Common Side Effects:** Dizziness or lightheadness; irregular, slow or fast heartbeat; confusion; diarrhea; muscle cramps; weakness; insomnia; and low blood pressure.

<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Trade Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Atacand</td>
<td>Candesartan</td>
</tr>
<tr>
<td>Avapro</td>
<td>Irbesartan</td>
</tr>
<tr>
<td>Cozaar</td>
<td>Iosartan</td>
</tr>
<tr>
<td>Diovan</td>
<td>Valsartan</td>
</tr>
</tbody>
</table>

Inotropic Therapy

“Inotropes” are medications that are administered intravenously (IV) for patients with severe, end-stage heart failure symptoms. These IV medications are used to help the weakened heart muscle pump harder and send more blood to the rest of the body. Inotropes are only used when other heart failure medicines are no longer able to control heart failure symptoms. Patients who need inotropes can often receive the IV infusions at home with the help of home health care nurses. These medications are usually ordered to be given continuously or periodically over 6 to 72 hours, one or more times per week. When receiving these IV medicines, patients should never discontinue the medication from their intravenous (IV) line or from the infusion pump without consulting their doctor. Following a low-sodium diet and avoiding alcohol consumption is crucial while receiving inotropic therapy.

**Common Side Effects:** Dizziness or lightheadness; headache; increased heart rate; high blood pressure; nausea and vomiting; shortness of breath; leg cramps; and tingling sensations in the extremities.
Additional Medication Information

~ Always notify the Heart Clinic staff of any new medications you may be taking, including over-the-counter medicines.

~ Avoid alternative medications that can adversely affect heart failure including: ephedra, ephedrine metabolites, chinese herbs, & hawthorne (crategus) products.

~ If you are on a blood thinner (i.e. Coumadin or Plavix), the following supplements can interact with your medication: Garlic, Ginseng, Gingko, & Coenzyme Q-10.

~ Avoid non-steroidal anti-inflammatory medications (NSAIDs) which can worsen heart failure symptoms. Examples include ibuprofen (Motrin or Advil), indomethacin (Indocin), and naproxen (Aleve, Anaprox). Ask your nurse or pharmacist for a complete list of NSAIDs that you should avoid. You CAN take acetaminophen (Tylenol) to treat general aches, pains, and fever as directed.
Exercise and Cardiac Rehabilitation

“Every heart that has beat strong and cheerfully has left a hopeful impulse behind it in the world and bettered the tradition of mankind.”

~ Robert Louis Stevenson
Heart Failure and Exercise

Prior to 1980, patients diagnosed with heart failure were discouraged from participating in a formal exercise program. Since 1980 several research studies have proven the benefits and now patients diagnosed with heart failure are encouraged to exercise. A very important addition to your treatment plan will be to increase your activity level. Activities such as exercise, work and sex are healthy and safe for most people who have heart failure. Being active will help you feel better, decrease your heart failure symptoms and can help improve your heart’s function. It can also be a great tool to relieve stress and prevent or treat symptoms of anxiety and depression. Be sure to talk to your doctor before starting an exercise program or increasing your activity level. Although we recommend regular activity, there are certain times that you should not exercise. **Avoid increased activity if you have more shortness of breath at rest, feel exhausted, have chest pain, have a fever or infection, or are going through a major change in your medication.** Here are some initial tips to get you going.

- Avoid temperature extremes. For exercise, ideal outdoor weather is 40-75° Fahrenheit, 60% humidity as indicated on page 50 of this guide.
- Exercise before meals or wait 1-2 hours after a meal.
- Do not combine tobacco with exercise.
- Take a day off if you are ill or have an infection.
- Wear supportive shoes that fit comfortably.
- Layer clothing so you can take off or put on as needed while exercising.
- Warm up and cool down sessions should be prolonged (10-15 minutes each).
- Start slow, in both time and speed, and increase very gradually.
- Avoid exercise or any activity that causes a burst of effort.
- Avoid isometric exercises (exercises in which one set of muscles is briefly used in opposition to another set of muscles or to an immovable object)
- Use heart rate (HR) and Relative Perceived Exertion (RPE) guidelines as you begin an exercise program (see pages 40-41). To calculate your target heart rate during exercise take your heart rate while resting and add 5 and 15 beats.

For example, if your resting HR is 80, add 5 to 80 and get 85. Add 15 to 80; then you get 95. Therefore, your target heart rate during exercise would be between 85-95. Your RPE/RPD should also be 11-14.
Heart Failure and Exercise - continued

♥ As you progress in your exercise capacity: Take heart rate at rest, add 20-30 beats.

For example, if your heart rate at rest is 80 and you add 20, that equals 100. Then take 80 and add 30 and you get 110. That means, your heart rate during exercise should be 100-110. Your rate of perceived exertion (RPE)/rate of perceived difficulty (RPD) should also be 11-16.

♥ Rely more heavily on RPE/RPD if you are on beta blocker medication because your heart rate may not elevate.

♥ Do not exercise if you have had an unexplained weight gain of 3 or more pounds.

♥ In the beginning, a 5-10 minute warm up may be all you are able to tolerate. As you become stronger, gradually build to 30-45 minutes of exercise, 5-7 days a week.

♥ After exercising, you should feel recovered in one hour or less. If not, reevaluate your workload and decrease the intensity and/or duration of your exercise session.

♥ You may want to include strength training to improve muscle tone. Check with your doctor before starting.

~ Start with low-resistance (1-2 lb. weights).
~ Instead of increasing resistance, increase repetitions.
~ Never hold your breath while lifting weights.
~ Perform repetitions slowly to a count of 3 up and 2 down.
Heart Transplant and Exercise

Read and follow “Heart Failure and Exercise” guidelines on the previous page with the following changes:

Resting heart rate (RHR) is typically elevated above “normal” and may not elevate by 20-30 beats, or may elevate later in your exercise session and remain elevated long after your stop exercising. This is normal. Use the RPE/RPD of 11-16 to guide your exercise intensity.

Exercise is a safe and recommended part of your recovery process. There are some unique considerations for the heart transplant patient. Your new heart is “denervated” – this means there is no nerve supply that tells the heart to speed up or slow down. Your heart depends on a “hormone surge” from the body to speed up the heart. Extend your warm up exercises to 5-10 minutes to allow for this “hormone surge” to kick in. At the end of your activity, add a 5-10 minute cool down session, to prevent injury to your muscles and allow the heart rate to gradually slow back to baseline. You may notice it takes longer for your heart rate to elevate in response to exercise and will stay elevated longer. This is normal after transplant.

Other things to consider:

♥ Do not begin a muscle strengthening routine involving your arms for six to eight weeks after surgery.
♥ No lifting weights for six weeks after surgery. Do not lift, push or pull more than ten pounds for six to eight weeks.
♥ Don’t exercise when you are sick, have a temperature, or infection.
♥ Avoid exercising outdoors in very hot or cold weather.
♥ Avoid crowds as directed by your transplant coordinator.
Taking Your Pulse (Heart Rate)

It is important for you to learn how to take your pulse so that you can monitor your exercise responses at home. The number of beats you feel per minute is your heart rate or pulse.

**Step 1:** Use the first two fingers of your right or left hand. Place them lightly on your wrist directly below the base of your thumb. Gently press the skin down to compress the artery against the bone to feel the beating of the pulse.

**Step 2:** When you feel the beat, watch the second hand of your watch or clock. Count each time you feel the pulse in ten seconds. The number of beats you count in ten seconds is then multiplied by six to give you your pulse rate or heart rate per minute. A conversion table is shown below.

<table>
<thead>
<tr>
<th>Conversion Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>If you count:</td>
</tr>
<tr>
<td>Your pulse is:</td>
</tr>
</tbody>
</table>

| If you count:    | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 |
| Your pulse is:   | 108| 114| 120| 126| 132| 138| 144| 150| 156| 162|

Your heart rate slows down very quickly when you stop exercising. It is important that you find and count your pulse immediately upon stopping your exercise. If you have difficulty feeling your pulse in either wrist, ask the cardiac rehabilitation staff or your nurse to instruct you in another site or utilize the RPE scale. Pulse watches are available for those who cannot accurately count their pulse or have trouble learning. Ask the cardiac rehab staff for more information.
Rate of Perceived Exertion (RPE)

The following chart monitors the intensity of an activity by allowing you to be aware of the “sensation of effort” you are putting forth. Combine all sensations and feelings of physical stress, effort and fatigue. You should rate the exertion level you feel during activities from a 6 to 20 (“6” being the easiest physical work you can do and “20” as the most difficult).

<table>
<thead>
<tr>
<th>6</th>
<th>Very, very light</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Very light</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Fairly light</td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Somewhat hard*</td>
</tr>
<tr>
<td>14</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Hard</td>
</tr>
<tr>
<td>16</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Very hard</td>
</tr>
<tr>
<td>18</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Very, very hard</td>
</tr>
<tr>
<td>20</td>
<td></td>
</tr>
</tbody>
</table>

*Do not exceed an RPE of “13” or what you might call a “comfortable push.” You can also think of “13” as being a little sweaty, a little short of breath but able to breathlessly talk while you exercise.

Rate of Perceived Breathing Difficulty (Dyspnea) (RPD)

The Rate of Perceived Dyspnea can be used in the same way although you will be assessing your breathlessness only instead of your general overall feelings of exertion.

<table>
<thead>
<tr>
<th>6</th>
<th>Very, very easy to breath</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Very easy to breathe</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Fairly easy to breathe</td>
</tr>
<tr>
<td>12</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Somewhat short of breath</td>
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<tr>
<td>14</td>
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<td>15</td>
<td>Short of breath</td>
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<td>16</td>
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<td>17</td>
<td>Very short of breath</td>
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<td>18</td>
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<tr>
<td>19</td>
<td>Very, very short of breath</td>
</tr>
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<td>20</td>
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Excessive fatigue that lasts more than an hour after you finish exercising is an indicator that you need to decrease the intensity and/or duration of your next exercise session. You should feel recovered one hour or less after exercise.
Guide to Calculate Your Target Heart Rate Range (THRR)

Take your resting heart rate (pulse) and add 20-30 beats:

For example: if your resting heart rate is 80
80 plus 20 = 100
80 plus 30 = 110

Your target heart rate is 100-110

If you are on beta-blocker medications (such as Coreg or Toprol) your heart rate may not be able to increase by 20-30 beats. Use the RPE scale on page 41 to guide your pace.

After five minutes of aerobic exercising, stop and check pulse. If it is too high slow down; if it is too low, speed up your pace, but never to an uncomfortable level. Make sure you check your heart rate again during the middle of exercise and check again if you feel you are working too hard.

Stop exercising if you note any of the following:

1. Chest, neck, jaw, teeth, shoulder or arm pain that is unusual. If you have been prescribed nitroglycerin, carry it with you when exercising and use as needed. If symptoms are relieved, report nitroglycerin use to your doctor as soon as possible. If symptoms are unrelieved, go the emergency room.

2. Unusual shortness of breath, or increase in shortness of breath with less activity.

3. Dizziness or nausea.

4. Ankle swelling or unexplained increase in weight.

5. Resting heart rate is significantly higher or lower than what has been normal for you.

6. Skipped beats that appear more frequently than usual.

7. Joint, muscle, or ligament pain or problems.

Report this information to your doctor right away.
Cardiac Rehabilitation

Cardiac rehabilitation is a prescribed and monitored program of exercise; health education, counseling, and emotional support to help people with heart disease enjoy better health. Experienced health care professionals who are specially trained in cardiac care provide this comprehensive program.

**Cardiac rehabilitation can help if you:**
- Have had a heart attack or related chest pain
- Have heart disease, such as coronary artery disease or heart failure
- Have had heart surgery or another heart procedure

**What’s in it for me?**
The goals of cardiac rehabilitation are different for each patient. In helping set your personal goals, your health care team will look at your general health, personal heart problem, risks for future heart problems, doctor’s recommendations and, of course, your own preferences. Besides reducing your symptoms and your chances of having more heart problems, cardiac rehabilitation has many other benefits including:
- Feeling better faster
- Managing stress
- Returning to your usual activities
- Living a longer and healthier life

**Cardiac Rehabilitation involves a team of health care professionals which may include:**
- Doctors: your family doctor, heart specialist (cardiologist) and perhaps a surgeon
- Nurses
- Dietitians
- Physical therapists
- Occupational therapists
- Pharmacists
- Chaplains
- and other health care professionals

But the most important member of your cardiac rehabilitation team is you. No one else can make you exercise, quit smoking, or eat a healthier diet.

**Be an active member of the cardiac rehabilitation team**
- Learn about your heart condition and what you can do to help your heart
- Follow the treatment plan
- Feel free to ask questions
- Report symptoms or problems
Three Phases of Cardiac Rehabilitation

Phase I: In the Hospital
If you are hospitalized, cardiac rehab nurses and physical therapists with special training will closely monitor your physical activity. Educational sessions will be conducted at your bedside or in a classroom setting. The major focus of Phase I is to provide you with information about your heart condition, risk factors, diet, medications, tests, and procedures. Providing emotional support and assisting you in low level exercise are also priorities.

This guide specifically addresses Phase I, which is your first step toward recovering from your heart disease. Your spouse, family members and close friends may want to learn more about heart problems so they can play a role in your rehabilitation. Your family and friends can give you emotional support as you adjust to a new, healthier lifestyle. We encourage your family and friends to participate in all the educational sessions and to let the nurse know if they have any questions along the way.

Phase II: After Hospitalization*
After you are discharged from the hospital, you may enter the outpatient phase of our program. This program consists of 12 weeks of supervised exercise while your heart response is monitored on an EKG screen. Your progress will be monitored by registered nurses who are specially trained in cardiac rehab and certified in CPR and Advanced Life Support. You will exercise at the Cardiac Rehabilitation Fitness Center three times a week for sessions lasting 60-90 minutes. In addition to your exercise at the fitness center, the staff will provide information to assist you in modifying your risk factors for heart disease and work with you to develop an individual home exercise program so you can continue exercising on your own once you have graduated.

Phase III: Active Living*
You may join our unmonitored, supervised maintenance exercise program called Active Living when you graduate from our Phase II program. You may also join if you are more than six weeks past hospitalization, or if you simply wish to prevent disease. You will exercise independently in our controlled setting where we monitor your heart rate and blood pressure. Phase III helps you to continue using the skills you learned for heart healthy living and use them for a lifetime.

*For participation in Phase II and Phase III it is necessary to have a doctor’s order. Your Heart Clinic Team can make a referral for cardiac rehab at your clinic visit.
Getting Started: Inpatient Cardiac Rehab Phase I

This phase takes place in the hospital following surgery, a heart attack or another heart problem. It begins when your condition has become stable. We encourage you to receive help getting out of bed and begin moving as soon as possible.

Recommended activities while you are in the hospital

If you are able to walk in your room, or are walking in the halls, it is encouraged that you also

♥ Sit in a chair for meals (as well as at other times throughout the day).
♥ Walk to the bathroom (instead of using a bedside commode).
♥ Do as much of your bathing as you are capable.
♥ Shower (when your doctor gives you permission – if in doubt, please ask your doctor or your nurse).
♥ Comb your hair, dress, shave, etc. as much as you are capable.
♥ Perform the warm up and cool down exercises illustrated on pages 20-21 a few times each day.

These regular activities will help you increase your strength and coordination. Pace yourself. Allow rest breaks between activities to avoid fatigue.

If you have been given permission by your doctor or cardiac rehabilitation nurse to walk in the halls

♥ Try to walk two to four times per day.
♥ Walk either before meals or wait 30 minutes to one hour after a meal.
♥ If you need an oxygen tank, ask your nurse to bring one to you.
♥ If you need help to walk, or need help to push your oxygen tank or IV pole, ask your nurse for help. We are here to help you get better.
♥ If you have had heart surgery, or have a lung problem, and have been given a hand-held breathing machine (incentive spirometer), use it every hour (while awake) for 5-10 deep breaths.
Cardiac Rehabilitation Exercises

~ Do 5-10 repetitions of each of these exercises (1 through 9) before walking as a warm up (choose between #1, 2, or 3).
~ Do 5-10 repetitions of the leg exercises after walking as a cool down.
~ Perform these warm up and cool down exercises before and after a walk, or at any time during the day. These are exercises that will help increase your strength and coordination and should help you get well faster.
~ **DO NOT lift arms over head after having a pacemaker or internal defibrillator inserted (unless otherwise instructed by your physician).**

**Exercise 1**
Lying on back, legs straight, point toes toward face, then point toes away from face.

**Exercise 2**
Sitting in a chair, go back on heels, toes off ground, then go forward on toes raising heels off the floor.

**Exercise 3**
Standing, hold on to a chair for balance, go forward on toes, heels off the floor.

**Exercise 4**
Sitting in a chair, knees bent, raise the right leg up parallel to the floor. Hold for a count of 3-6 seconds. Put right foot back on floor and repeat with the left leg.
**Exercise 5**
Sitting or standing, bend the right leg up and move the knee toward your chest. Repeat with the left leg.

**Exercise 6**
Sitting or standing, both arms straight out to your sides, parallel to the floor, palms facing up. Bend elbows and touch fingers to shoulders, then straighten.

**Exercise 7**
Sitting or standing, hands clasped in front, raise arms up and over head, bending the elbows slightly. Inhale while raising, exhale when lowering.

**Exercise 8**
Sitting in chair, arms straight out in front. Exhale when moving them forward, inhale when bending elbows and pulling them back toward your body.

**Exercise 9**
Sitting or standing with arms hanging loosely along your sides, raise and lower your shoulders, inhale when raising, exhale when lowering.
Cardiac Rehabilitation Home Exercise Program

- At home, we recommend you start out walking the same number of minutes you were walking in the hospital. If in doubt, or if you haven’t recently been hospitalized, start with five minutes twice a day.

- Increase your time by one to two minutes every one to three days as you feel able. As your walks become longer, you can eventually walk once a day if you choose.

- To be “heart healthy,” walk (or another aerobic exercise) for three and a half to four hours per week (excluding warm ups and cool downs). For example:
  - 30 to 45 minutes, once a day for five to seven days a week
  - 15-20 minutes, twice a day for five to seven days a week
  - 10 minutes, three times a day for five to seven days a week

- Do warm up exercises for 5-10 minutes before you exercise. This will help avoid sudden changes in heart rate and blood pressure. Do cool down exercises for 5-10 minutes after you exercise. You can do the exercises you were shown in the hospital phase of rehab or do slow walking or biking with no resistance. (If you have had heart surgery, do not bike until your doctor says it is safe.)

We want you to succeed at exercising!
We highly recommend a structured exercise program. Ask your rehabilitation team for more information about the outpatient cardiac rehabilitation program.
Choose exercise options that fit your life

♥ Make it enjoyable. Choose activities that you like and vary them so you don’t get bored.
♥ Exercise with a friend or join a walking club if you would enjoy company.
♥ Think about whether you’d like to exercise at home, join a gym, do “mall walking,” exercise outdoors or enroll in outpatient cardiac rehabilitation. Ask about your option. See our resource section at the end of this manual for a list of malls and their hours.
♥ Would you like to exercise in the morning, afternoon or evening? Choosing the right time can help you keep exercising regularly.
♥ Does an exercise program create a financial burden on your? Your rehabilitation team can help you choose activities that require little or no equipment.

Is walking difficult for you? Do you simply not like walking? Here are some alternatives for you to consider:

♥ Walk for shorter periods of time and more frequently, such as 10 minutes, three times a day.
♥ Try a stationary bicycle. If you had heart surgery, however, do not exert pressure on your arms for six weeks. Recumbent stationary bikes are a good option if you have hip or knee problems.
♥ Try “Sit and Be Fit,” an exercise program on the Public Broadcasting Station (PBS). Check local TV listings for the time.
♥ Find a swimming pool and try water walking, water aerobics or swimming.
♥ Do not get into a swimming pool until all incisions have completely healed and when it’s OK with your doctor. Water exercises are less strenuous on your joints.
Exercise Guidelines to Follow at Home

♥ When you exercise, let your heart rate (pulse) and Rate of Perceived Exertion (RPE) be your guide.

♥ If you are using the RPE scale to guide your walking distance and speed, DO NOT exert more than “13” ("somewhat difficult" or "a comfortable push"). But DO push gradually to exercise at an RPE of “13.” This will ensure that your heart is getting a good work out.

♥ You may climb stairs, but remember that climbing stairs is three times as hard as walking on a level surface. Climb stairs according to your safe pulse rate and RPE “13.” Stop and rest or slow down if the climb becomes too hard.

♥ DO NOT walk immediately after a meal. Walk before meals or wait at least 30 minutes to one hour after a meal.

♥ Never take a hot or cold shower or sauna bath immediately before or after exercise.

♥ Walk in a pattern that will allow you to easily return home just in case you become too tired to continue or develop unusual symptoms.

♥ If you become too tired, stop and rest before returning home.

♥ It is advisable that you walk with another person in the initial stages of your exercising program.

♥ In cold weather, walk, exercise or work during the warmest part of the day. During hot and/or humid weather, walk, exercise or work during the cool of the day.

♥ The ideal exercise weather is 40–75 degrees Fahrenheit – less than 60 percent humidity and less than 15 m.p.h. wind velocity.

♥ When it is too hot or cold to exercise outdoors, walking in a shopping mall or riding a stationary bike indoors are good alternatives. (DO NOT ride a bike until your physician says it is O.K. to do so.)

♥ Do not hold your breath with any activity, especially with bowel movements.

♥ Do not exercise if you have a fever, cold or flu. After you have recovered, resume exercise at a lower level until your strength has increased.

♥ After a heart attack, avoid excessive arm exercises until fully recovered because these make your heart work harder.

♥ If you had heart surgery, continue to do the arm and leg exercises as you did in the hospital (cardiac rehabilitation exercises). This will help you regain motion and strength.

♥ Exercise at a comfortable pace, remembering to use your heart rate and RPE as guides for speed. Remember that the purpose of your exercise is to strengthen your heart muscle, not to see how fast you can go! Under NO CIRCUMSTANCES should you jog or run unless approved by your doctor.
Sexual Activity

A lot of heart failure patients wonder if they can still participate in sexual activities – the answer is YES! Just like with any other activity, don’t have sex if you are feeling very short of breath, having chest pain or feeling faint. Here are some ideas to help:

~ Talk to your partner about your concerns and needs.
~ Pick a time to have sex when you feel rested and comfortable.
~ Avoid sex after having a big meal.
~ Have sex in a comfortable room that isn’t too hot or cold.
~ Use foreplay to help slowly increase your heart rate before having intercourse.
~ Avoid positions that you have to use your arms for supporting your weight or other strenuous positions.
~ If you are male and have problems with erectile dysfunction, talk to your doctor about treatment options.
~ If intercourse is difficult for you, try to find other ways to feel close to your partner – find other ways to show affection such as mutual forms of sexual stimulation other than intercourse and increasing nonsexual affection with your partner.
Smoking Cessation

“For me, the only things of interest are linked to the heart.”
~ Audrey Hepburn
Health Effects of Cigarette Smoking

According to the Centers for Disease Control and Prevention (CDC), cigarette smoking contributes to more deaths each year than motor vehicle accidents, murders, suicides, HIV, illegal drug use and alcohol use combined. Tobacco use is the most preventable cause of death in the United States. Here are some ways that smoking affects the body:

1. **Brain**: Addiction to nicotine; higher risk of stroke and dementia. One study found that elderly smokers may lose their cognitive abilities more rapidly than nonsmokers.
2. **Hair**: Smells bad, higher risk of baldness and premature graying.
3. **Skin**: Smells bad; premature, more and deeper wrinkles.
4. **Fingers**: Discolored.
5. **Eyes**: Higher risk of cataracts, age-related macular degeneration.
6. **Ear**: One study showed a 70 percent higher incidence of hearing loss among older smokers than among nonsmokers.
7. **Nose**: Sinus congestion.
8. **Senses of smell, taste**: Dulled.
9. **Lips, mouth, tongue**: Stained teeth, bad breath, cracked lips, sores, bleeding, gum disease, higher cancer risk.
10. **Throat, larynx, esophagus**: Sore throat, higher cancer risk.
11. **Lungs and respiratory system**: Cough; breathing problems; more frequent colds, flu, pneumonia; chronic bronchitis; emphysema; exacerbated asthma; higher risk of trachea and lung cancer.
12. **Heart and cardiovascular system**: Faster heartbeat, raised blood pressure, lower levels of HDL or “good” cholesterol, circulatory problems, higher risk of heart disease and heart attack.
13. **Stomach and digestive system**: More heartburn and gastric and duodenal ulcers; aggravation of liver disease caused by excessive alcohol; higher risk of stomach, liver, pancreatic and colon cancer; aggravated diabetes complications.
14. **Kidneys, bladder**: Higher cancer risk. One study showed women smokers and ex-smokers were twice as likely to develop incontinence as women who never smoked.
15. **Reproductive system**: Higher risk of infertility in both genders; in women, higher risk of menstrual disorders, ectopic pregnancy, miscarriage, early menopause and cervical and uterine cancer; in men, impotence.
**Health Effects of Smoking - continued**

16. **Pregnancy:** Higher risk of premature birth, stillbirth, low birth weight, infant mortality, lower infant intelligence or mental retardation.

17. **Bones and joints:** Higher risk of leukemia, degeneration and injuries of spine, and lower back pain among those who lift heavy objects. In women, higher risk of osteoporosis, postmenopausal hip fractures and small increased risk of rheumatoid arthritis.

*Sources:* American Academy of Family Physicians; American Cancer Society; American Diabetes Association; American Lung Association; American Medical Association; National Institutes of Health.

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**How Smoking Affects Heart Failure**

Nicotine tightens the blood vessels and will make your heart work harder to pump blood to and from your body. This will increase your heart rate and your blood pressure. As you inhale carbon monoxide into your lungs from tobacco, your red blood cells will not be able to carry as much oxygen to the rest of your body. Since you have heart failure, your body is already demanding more oxygen and blood than your heart is able to pump. Your lungs are already breathing harder around extra fluid that builds up with heart failure. When you inhale tar and other chemicals from the tobacco, your lungs have to fight even harder to provide enough oxygen to your body. Smoking also speeds up the rate of growth in plaques that block your heart arteries which increases your risk of heart attack. Along with the other effects from tobacco that increase coronary artery disease and peripheral vascular disease, smoking will definitely cause your heart failure symptoms to be worse and more difficult to treat.
You CAN Quit Smoking

Nicotine is a very addictive drug. We understand that as soon as you inhale that first puff of smoke, a chemical in your brain causes you to crave more nicotine. If you are ready to begin a smoking cessation program, do NOT get discouraged if it takes you more than once to quit. Some people try 2 or 3 times before they quit. **Don’t give up.** Let us help you with the process. Here are some steps to begin your program:

**STEP 1: Set goals**

~ **SET A QUIT DATE!**

~ Tell your health care team, family, friends and co-workers that you are going to quit and ask them for support and understanding.

~ Make and keep appointments with your healthcare providers for follow up.

~ Consider going to counseling for support. Studies have shown that you have a greater chance at success if you seek guidance and support from a counselor involved in your smoking cessation program.

~ Review your past attempts to quit and write down what you think worked and what didn’t. Talk to your counselor or other healthcare provider about your concerns and what caused you to resume smoking.

**STEP 2: Choose a Method**

There are several nicotine replacement therapies to choose from. These therapies will help lower your cravings and help relieve your withdrawal symptoms after quitting. **Discuss the options with your health care provider before making a decision!**

~ **Nicotine Patch or Gum**: Patches supply a steady amount of nicotine to the body through the skin. The gum releases nicotine into your bloodstream through the lining of your mouth. Some patches and nicotine gum are available over the counter at pharmacies in various doses. Nicotine doses are usually tapered down as your treatment progresses. Patients with skin problems, or allergies to tape, should not use the patch. You should not use the gum if you have dentures, other dental work like bridges, or jaw disorders.

~ **Nicotine Nasal Spray or Inhaler**: These methods are only available with a prescription. They both deliver a vaporized version of nicotine to your body. With the inhaler, the nicotine doesn’t go all the way to your lungs because most of it is absorbed in your mouth and throat. Patients with lung problems from asthma or emphysema and those with nasal or sinus problems should not use these types of therapy.
There is a smoking cessation aide that doesn’t contain nicotine:

~ **Bupropion (Zyban):** This drug is an antidepressant that is available through prescription only. It can help decrease the urge to smoke and lessen withdrawal symptoms.

**STEP 3: Learn How to Manage Urges to Smoke**

~ Change your environment! Get rid of the smell of cigarettes at home and in your car. Throw out your ashtrays and any extra cigarettes or other forms of tobacco.
~ Change your habits! Stay away from places that you would normally smoke in. During breaks that you would normally take to smoke, choose another activity to keep busy (walking, chewing gum, running an errand, etc).
~ Be aware of things that usually make you want to smoke such as being around other smokers, drinking alcohol, being under time pressure, getting into arguments, or feeling depressed and frustrated.
~ Try to get your spouse or housemates to quit with you if they are smoking.
~ Exercise! Walk, jog, bike or start doing yoga or Pilates to refocus on other things instead of your nicotine cravings.
~ Keep a list of times that you have (or almost have) cheated and smoked a cigarette. Try to learn from your list and avoid situations that may have caused your urge to increase.

**Other Helpful Information**

- You may be concerned about gaining weight after you quit smoking. However, the average person gains less than ten pounds and this is a minor health risk compared to the risk of continuing to smoke. Exercising, eating a healthy diet, and getting enough sleep will help prevent weight gain.
- Using smokeless tobacco, like chewing or dipping tobacco, can be as harmful as smoking and is as addictive!
- Choose some type of way to reward yourself at various “anniversaries” after you quit – for example, reward yourself at 30 days, six months, and yearly.
“Remember that our heart is our will, or our spirit: the center of our being from which our life flows. It is what gives orientation to everything we do. A heart rightly directed therefore brings health and wholeness to the entire personality.” ~ Dallas Willard
Common Feelings about Heart Failure

It is common for people who have heart failure to feel unhappy, frightened, and anxious after learning about their diagnosis. Your symptoms may be causing your quality of life to be different than even a short time period ago. Feeling short of breath, bloated, and tired all the time often makes you not enjoy the same activities you would have usually liked to do. After a while, a chemical imbalance in your brain can be a reaction to these symptoms if your coping skills are altered and can cause depression.

Research shows that patients who were recently diagnosed with heart problems and have major depression are more likely to have a heart attack, surgery or death within one year. Depression is more highly associated with cardiac problems than even high cholesterol, high blood pressure, diabetes, or smoking! If signs of depression and/or anxiety interfere with your ability to do and enjoy normal activities, or if your relationships are affected, you should notify your healthcare team. **You may be depressed if you have any of the following symptoms for more than two weeks:**

- Feeling “down”, worthless, guilty, hopeless, and/or helpless
- Irritability
- Loss of interest in things you used to enjoy
- Trouble sleeping or sleeping too much
- Loss of appetite or overeating
- Crying
- Feeling restless or shaky
- Loss of interest in sex
- Suicidal feelings
- Preoccupation with death
- Excessive worry

If you experience depression or anxiety, please talk to your health care provider at the Heart Clinic. We have a full-time psychiatrist and psychologist available for appointments with you, or we can offer you other counseling resources in your community that will be glad to give you support. **It is very important to get help for your emotional health because depression and anxiety can worsen your overall well-being.**
Treatment Options

~ The most important treatment for depression and anxiety is talking to a professional who can help you deal with your individual feelings and coping skills.

~ There are certain medications that may be helpful in treating your symptoms. These medicines help balance certain chemicals in your brain and can help you feel less overwhelmed with stress.

~ Consider joining a support group with other people who have heart failure and heart disease. Talking with other patients who feel the same way you do can help you better cope with your own feelings. Use the resource list provided at the end of this manual for resources.

~ Find ways to decrease your stress level and how to use relaxation techniques.

Here are some tips to decrease your stress level:

• Get a good night’s sleep! If you are not able to fall sleep or stay asleep, your body will keep getting more fatigued and your coping skills will lack the ability to prevent you from feeling depressed or anxious. Talk to your doctor if you are having trouble sleeping.

• Try to get outside every day even if it is only for a few minutes. If the weather is hot or humid, go out early in the morning or later in the evening when it’s cooler. If it’s cool outside, wear protective clothing with a coat or jacket.

• Ask your family and friends for support. Make plans to try new activities or at least get together for regular visits. This will help you feel less isolated and lonely.

• Exercise! Regular exercise is a proven treatment for anxiety and depression. Research shows that 30 minutes of exercise three days a week is as effective as taking some anti-depressants.

• Avoid trying to do two or three things at once. Slow down, prioritize, and make checklists. Don’t feel like you need to do everything.

• Eat healthy! If you follow a low-sodium diet, you’ll be less likely to have more swelling so you will feel more like doing things you like to do. Eating a balanced diet will give you more energy to participate in daily activities.

• Avoid caffeine which will help lower your blood pressure and make you feel less anxious.

• Practice slow, deep breathing techniques. Ask your nurse for help learning how to do this if you have not done it before.

• Use guided imagery – this is a relaxation technique that lets you think of a quiet, relaxing, pleasant place in your mind that will give you a sense of peace and contentment.
Diagnostic Tests

“One learns people through the heart, not the eyes or the intellect.”

~ Mark Twain
Tests to Monitor Your Heart

After being diagnosed with heart failure, there are several tests that your Heart Clinic staff will order periodically to evaluate how your heart is doing. These tests help us determine what kinds of treatments to use that will help improve your heart failure symptoms.

**Echocardiogram (Echo)**

An “echo” uses sound waves to look at your heart and make pictures of it with two or three dimensions. Doppler imaging can be done to show how the blood is moving in the heart. Your doctor can determine how thick your heart muscle is, how well your heart is pumping, and how healthy your heart valves are. Your ejection fraction (as discussed earlier in Chapter 1 – “How Your Heart Works”) is measured during the echo. The echo can also detect clots inside the heart chambers, but not in your arteries like other tests can do. Having an echo done is painless and does not use dye or other injections during the test. Each test usually takes about 20 minutes.

A “transesophageal echocardiogram” may be done if your doctor needs more pictures of your heart than a traditional echo can provide. This echo is done by placing a swallowing tube down the esophagus to the back of your heart and recording sound waves from the tube. Patients are awake during the procedure but are given medication to relax, and medication to numb the back of the throat. This test also takes 20-30 minutes and can be done on an outpatient basis.
Stress Testing

Stress tests monitor your heart rate, rhythm, and blood pressure at rest, during and after exercise on a treadmill. During some stress tests, patients may have intravenous medications to make it seem like they have exercised if they are unable to walk on a treadmill. Usually, pictures of your heart are taken before exercise and again after exercising to see if your heart is getting enough blood flow during exercise. A nuclear radioisotope (tracer) is sometimes injected into your veins before these pictures are taken to make the blood flow show up better during the test.

You may be asked to breath into a breath analyzer that measures the gas exchange of oxygen and carbon dioxide in your lungs. This is a Myocardial Oxygen Consumption (MVO2) stress test. This test shows the maximum amount of oxygen your heart can give the rest of your body during sustained activity. “VO2 Max” is the point at which your body cannot increase its intake of oxygen even though the exercise is still intense.

Cardiac Catheterization (Cath)

A “cath” is also known as a coronary angiogram. This diagnostic procedure is used to look at the arteries in your heart to see if there are blockages. The doctor can also assess how your heart is pumping, how well the valves are working, and measure the pressures in your heart chambers. Cardiac catheterizations are usually done as an outpatient basis. You will be awake during the procedure which takes less than an hour.

To perform the test, the doctor will insert a thin, flexible tube (catheter) into an artery in your leg or arm after a local anesthetic is given in that area. The catheter goes to your heart and a dye is injected into your coronary arteries and heart chambers to see how well the blood is flowing and pumping. As the test is done, the doctor and several other technicians and nurses will be monitoring the catheter on a television monitor beside you. After the test is completed, the doctor will remove the catheter and pressure will be applied to the cath site with a pressure bandage. Nurses will monitor you closely by taking your blood pressure often, and by looking at your cath site frequently to make sure there is no bleeding.
In most cases, you will go home on the same day unless there is a problem with your heart that will need addressed at the hospital before you leave. Upon discharge, avoid heavy lifting for several days and only do light activities for a few days. You may have a small bruise or feel a lump under the skin where the insertion site was. The lump should only be about the size of an olive, but if it gets bigger, you will need to notify your doctor. The bruising and lump usually go away in just a few days. Since this is an “invasive” procedure because a catheter was inserted into your body, there are some risks involved. Please ask your doctor to discuss the risks and benefits so you will be completely informed.

**Holter Monitor**

A Holter monitor records the heart’s electrical activity for a 24 hour period. You may need this test, or one called an “event monitor” to wear for 30 days. These monitors are used to record your heart’s rhythm if you are having palpitations or other symptoms that may be related to an abnormal heart rate or rhythm. You will have electrodes similar to those used when you get an EKG (ECG – electrocardiogram) that are placed on your chest. The monitor is hooked to the electrodes and worn on a special belt. The recorded information is downloaded by a technician and evaluated by your doctor. You will also be given a “symptom diary” to write down the symptoms you are experiencing and when you feel them. It is important that you record any symptoms you feel and the time you feel them while you are wearing the Holter monitor.

**Laboratory Data**

At your initial and follow up visits in the Heart Clinic, you will have blood drawn to evaluate several components. We regularly evaluate your blood for anemia and signs of infection, kidney and liver function, electrolytes (like sodium and potassium), lipid values (cholesterol, triglycerides, HDL-”good cholesterol”, and LDL-”bad cholesterol”), fluid status, thyroid function and certain medication levels. Other laboratory data may be ordered according to your individual clinical history, physical exam and symptoms. Your lab results will be reviewed with you at each clinic visit or by telephone follow-up by one of our Heart Clinic staff members.
Surgical Treatment for Heart Failure

“We’re suffering from only one disease in the world. Our basic problem is a heart problem. We need to get the heart changed, the heart transformed.”

~ Billy Graham
Implantable Cardiac Devices

**Pacemaker**
Pacemakers are used primarily to treat slow heart rates. The device will monitor your heart rate and can send small electrical impulses to increase your heart rate if it senses that your heart rate is too low. Pacemakers are small metal devices that are placed in your upper chest with lead wires going to your heart. They are about the size of a pocket watch and can usually be implanted on an outpatient basis using local anesthesia.

**Implantable Cardioverter Defibrillator (ICD)**
An ICD is an electrical cardiac device that is used to treat very fast heart rates and can stop life-threatening abnormal heart rhythms. The ICD monitors your heart rhythm at all times and will notice any abnormal rhythm. Within seconds, it can try to get your heart back into a normal rhythm by delivering painless pacing impulses or a more noticeable shock to your heart. ICDs are often used in patients who are at a high risk for sudden cardiac death due to their clinical history. The ICD is implanted into your upper chest with lead wires to your heart similar to a regular pacemaker. The procedure is often performed on an outpatient basis.

**Biventricular Pacemaker**
In a large number of heart failure patients, the electrical impulses in the heart are slowed and the signals to one, or both, of the heart’s lower chambers are delayed. If that happens, the two lower chambers may not pump at the same time. When the heart’s contractions are out of sync, your heart cannot pump enough blood to the body. A special type of pacemaker called a “biventricular pacemaker” or “cardiac resynchronization therapy” (CRT) can send electrical impulses to both lower chambers at the same time to coordinate the pumping function of your heart. Some of these devices also have an ICD with them as described above.
Ventricular Assist Device (VAD)

Some patients with very severe heart failure do not improve with medications only. If their heart continues to deteriorate and becomes unable to pump enough to sustain life, they may be offered a ventricular assist device for “Destination Therapy” or as a “Bridge to Transplant”. During bridge-to-transplant, patients receive a VAD to support their heart while waiting for a donor heart. If they are not eligible for transplant, the VAD can provide long-term support for the patient’s heart as destination therapy.

VADs are placed for pumping support of the left, right, or both chambers of the heart. A VAD is a pump that is surgically connected to the heart in two places to replace the pumping function of the existing heart. The pump itself may be placed in the patient’s abdominal cavity or outside of the body. These devices are connected to an outside power source, but battery-powered connections are available to allow patients to go home from the hospital. Each device is different and will depend on the patient’s body size and medical condition. Not every heart failure patient is eligible for a VAD. The patient must meet certain criteria of their overall health conditions, blood pressure, blood flow and body size. Surgery to insert a VAD involves a variety of certain risks. If this therapy is recommended, your doctor will review the risks, benefits, and possible complications of this open heart surgery.

Heart Transplantation

A heart transplant can replace a failing heart that no longer pumps enough to meet the demands of the body. Most candidates for cardiac transplantation are not getting better with conventional medications and therapies. The patients may not be able to improve with other heart surgeries such as valve replacements or coronary artery bypass grafting (CABG) or are at a very high risk for complications with these surgeries. Transplantation is very costly due to the expense of the surgery itself, frequent follow-up care, and life-long medication therapy.

The surgery and the medications put a lot of stress on a patient’s body. Therefore, transplantation is only considered for patients with severe heart failure who meet transplant criteria and otherwise have healthy organs. If your doctor feels you may be a candidate for heart transplant evaluation, you will have to undergo multiple diagnostic tests and medical evaluations. You will also participate in various consultations with members of our Heart Transplant Interdisciplinary Team including our surgeons, dietitian, social worker, psychiatrist, financial advisor, and other consulting physicians as necessary.
**Other Heart Surgeries**

There are other heart surgeries and procedures that may be recommended to treat the cause of your heart failure. Most of the time, patients who are referred to our Heart Clinic have already had one or more heart procedures in the past. However, we may recommend another surgery if it will improve your quality of life and control your symptoms.

**Prosthetic Heart Valve Surgery:** There are certain types of heart valve problems that may develop which make the heart unable to pump as it should. Sometimes, the valve or valves that are not working can be surgically replaced with a human tissue valve, animal tissue valve, or mechanical valve. Patients who undergo this open heart surgery and valve replacement may be on long-term blood thinners to prevent clotting around the new valve; however, some patients are not candidates for blood thinner therapy due to their other medical conditions. Another option is “valvuloplasty”, which is a procedure that can widen a stiff or narrow heart valve. This is done with a balloon placed on the end of a catheter and guided to the valve. Your doctor can evaluate your valves with an echocardiogram and/or a cardiac catheterization and make recommendations as needed.

**Coronary Artery Bypass Grafting (CABG):** CABG is sometimes needed to redirect blood in your arteries around fatty blockages that cannot be treated with medications or angioplasty (balloon) procedures and stenting. During this surgery, veins are taken from the leg area, and surgically placed in the heart to make *new connections* in the arteries which “bypass” the blockage or blockages. This will allow the heart to get more blood flow and prevent further damage to the heart muscle.
Health Maintenance and Compliance

“The human heart is as a frail craft on which we wish to reach the stars.” ~ Giotto di Bondone
Your Personal Treatment Plan

Following your prescribed treatment plan will make you feel better and help prevent your heart failure from getting worse. We understand that all of this new information can be overwhelming and you may feel like it will be hard to stay compliant with your treatment plan. But your healthcare team at the Heart Clinic will provide advice, support, and guidance to set you up for success! We expect you to be an active participant in your health care. At every Heart Clinic visit, we will discuss compliance with your treatment regimen, and talk about possible barriers to compliance. Please feel free to talk about your concerns and questions regarding your progress and treatment plan. Here is a list of ideas that will help you comply with your treatment plan and maintain or improve your overall health:

♥ Report symptoms of worsening heart failure at your clinic visits and via telephone calls to our Heart Clinic staff. Early detection and management of symptoms can prevent you from getting worse and having to go to the hospital.
♥ Take your medications as prescribed! Don’t run out of your medicine or miss refilling your medicine. Take the right dose and the right time. Don’t forget any doses and don’t stop any medication without contacting the Heart Clinic.
♥ Weigh yourself every day to see if you’re retaining fluid. Write down your weight and notify your doctor if you gain two-three pounds overnight, or five pounds in a week.
♥ Follow your low sodium diet carefully.
♥ Plan for adequate sleep and rest periods.
♥ Save your energy throughout the day. Do not try to do too much at one time. Schedule activities at varying times during the day. Ask your family or friends for help when you need it.
♥ Avoid alcohol and quit smoking cigarettes and cigars if you smoke.
♥ Exercise! Get regular physical activity every day. We want you to get moving as much as you can tolerate without over-exerting yourself.
♥ Join a support group to meet other people that have heart failure to get more ideas on how to manage your symptoms.
Heart Failure Symptoms ~ When to Call for Help

CALL 911 for emergency help if you have:
♥ Chest pain or discomfort that is not relieved with rest or nitroglycerin after 15 minutes.
♥ Severe, persistent shortness of breath.
♥ Episode of passing out or faintness.

Call your doctor if you have any of these symptoms:
♥ Increasing shortness of breath or new problems breathing while resting.
♥ Difficulty sleeping because of breathing problems – such as waking up suddenly during the night with shortness of breath.
♥ Using more pillows or support to sit up higher just to be able to sleep or rest.
♥ Fast or irregular heart beats (palpitations) that persist and make you feel lightheaded or dizzy.
♥ Coughing up pink or frothy sputum.
♥ Feeling like you may pass out.
♥ Rapid weight gain: three (3) pounds in one day or five (5) pounds in one week.
Resources

**Books**

- *ACSM Fitness Book* by The American College of Sports Medicine
- *Aerobics Program for Total Well Being* and other books by Kenneth H. Cooper, M.D., M.P.H.
- *American Diabetes Association Cookbook*
- *Anger Kills* by Redford Williams, M.D.
- *Choices for a Healthy Heart, Take a Load Off Your Heart, Don’t Eat Your Heart Out Cookbook, Controlling Your Fat Tooth, The Healthy Heart Cookbook*, and other books by Joseph C. Piscatella
- *Cooking a la Heart* by Linda Hachfeld, M.P.H., R.D. and Betsy Eykyn, M.S
- *Cooking Light Magazine*
- *Dr. Dean Ornish’s Program for Reversing Heart Disease, Eat More, Weigh Less, Stress, Diet, and Your Heart, Everyday Cooking, and Love and Survival* by Dr. Dean Ornish
- *Dr. Rosenfeld’s Guide to Alternative Medicine* by Isadore Rosenfeld, M.D.
- *The Zone* and other books by Barry Sears
- *Is It Worth Dying For?, How to Make Stress Work for You, Not Against You, and From Stress to Strength* by Robert S. Eliot, M.D.
- *Quick and Healthy Recipes and Ideas (for people who say they don’t have time to cook healthy meals!) Volumes I through VII* by B. Ponichtera, R.D.
- *The South Beach Diet* by Arthur Agatston
- *The American Heart Association Cookbook*
- *The Complete Low Sodium Low Salt Cookbook*, by Edith Tibbetts and Karin Cadwell
- *The Joy of Stress, How to Make Stress Work for You* by Peter G. Hanson, M.D.
- *The McDougall Plan* and other books by John A. Dougall, M.D.
- *The New Fit-or-Fat* and other books by Covert Bailey
- *The New Pritikin Program* and other books by Robert Pritikin
- *The Relaxation Response, Beyond the Relaxation Response, and Timeless Healing (The Power and Biology of Belief)* by Herbert Benson, M.D.

**Web sites**

- [www.SAHealth.com](http://www.SAHealth.com)  Information on food, safety, health, home and community
- [www.SAHeart.net](http://www.SAHeart.net)  Healthy heart information and resources
- [www.HeartCenterOnline.com](http://www.HeartCenterOnline.com)  Provides tools to help cardiovascular patients understand the complex nature of heart conditions, treatments and preventive care
www.TexasTransplant.org  Find information about the process for getting a heart transplant after all other heart failure treatments have been tried

www.fastfoodguide.com  Information and critiques on restaurants and hotels

www.1on1health.com  Information, tools and activities to live a healthier life

www.hoptechno.com/book11.htm  Fitness and exercise information

www.mbmi.org  The Mind Body Medical Institute: Managing Stress and Relaxation

www.consumer.gov  Resource for consumer information from the federal government

www.consumer.gov/weightloss/setgoals.htm  Comprehensive information on successful weight loss management

www.diabetes.org  American Diabetes Association website

www.cdc.gov/tobacco  Information an education on how to quit smoking

www.cdc.gov  Centers for Disease Control and Prevention; Health and safety topics, publications and products

www.iVillageHealth.com  Health and well-being information from a woman’s perspective

www.bartleby.com/107  Henry Gray’s Anatomy of the Human Body

www.lib.uiowa.edu/hardin/md/index.html  Hardin Meta Directory of health sources

www.healingwell.com  Resources on diseases, disorders, and chronic illness

www.healthatoz.com  Health and medical resources developed by health care professionals

www.healthcentral.com  Medical information, tools and resources for health improvement

www.americanheart.org  American Heart Association website

www.eatright.org  American Dietetic Association website

www.webmd.com  Health information on diseases and conditions

www.medlineplus.gov  Information to help answer health questions

www.intelihealth.com  Information on diseases, conditions, and healthy lifestyle

www.healthfinder.gov  Health information finder in English and Spanish

www.mayo Clinic.com  Health information from the world-renowned medical center

www.medicinenet.com  Health and medical information produced by board-certified physicians

www.nih.gov/health  Comprehensive health information from the National Institutes of Health

www.tripprep.com  Health and safety information for travelers—drugs, health and safety alerts, and medical information

San Antonio Mall Walking Programs

**Crossroads Mall**
Call 575-0355 for information
*Walker Wellness at Crossroads of San Antonio—Sponsored by 55PLUS®*
Walkers meet on the first Friday of each month at 8:30 a.m. for a wellness lecture, health screenings, refreshments, and door prizes.

**Ingram Park Mall**
Call 684-9570 for information
Doors open at 7:00 a.m., Monday through Saturday; 11:00 a.m. on Sunday
One Lap = 1.3 mile

**North Star Mall**
Call 342-2325 for information
Doors open at 7:00 a.m., seven days a week
One Lap = 1.75 miles

**Rolling Oaks Mall**
Call 651-5513 for information
Doors open at 7:00 a.m., seven days a week
One Lap of Upper and Lower Levels = 1 mile

**South Park Mall**
Call 921-0534 for information
Doors open at 6:00 a.m., seven days a week
One Lap = 1.5 miles
Support Groups

The following support groups are offered through Methodist Healthcare System. Please call the Methodist Healthcare HealthLine at 210-575-0355 or 800-333-7333 for meeting time and location of the group you are interested in.

- Alamo Gynecological Cancer Support Group
- ALANON
- Asthma Education
- Beyond Pink and Blue (prenatal and postpartum support)
- Better Breathing Club
- Diabetes Support Group
- Grief Support Group
- Multiple Sclerosis - Newly Diagnosed and Beyond
- Narcotics Anonymous
- Oncology Family Support Time
- Overeating Anonymous
- Prayer and Center Support Group
- SOS - Survivors Offering Support (Breast Cancer Support Group)
- Staplemates
- Trigeminal Neuralgia Support Group
- Tourette’s Support Group

Learn CardioPulmonary Resuscitation (CPR)

Immediate and properly administered CPR can save a life

It is important for all individuals to know CPR, but especially those living with heart patients. Methodist Healthcare and the American Heart Association offer classes to the community. Call the Methodist Healthcare HealthLine for more information about an upcoming class at 210-575-0355 or 1-800-333-7333.
For More Information

Advanced Heart Failure Clinic of the Methodist Heart Hospital*
Methodist Plaza
4499 Medical Drive, Suite 166
San Antonio, Texas 78229
210-575-8485
877-791-5438 Toll Free

Cardiac Rehabilitation Program
Methodist Specialty and Transplant Hospital
8026 Floyd Curl Drive
San Antonio, Texas 78229
210-575-8235

Methodist Heart Hospital
7700 Floyd Curl Drive
San Antonio, Texas 78229
210-575-4600

Heart Failure Education Series
Offered by Methodist Healthcare’s Cardiac Rehabilitation Program
One-hour on-going weekly classes covering the following topics “What is Heart Failure?”, “Exercise and Heart Failure”, “Heart Failure Medications”, “Stress and Heart Failure”, and “Diet Considerations and Heart Failure”
Call 210-575-8235 for location, time and day of the week the classes are held.

American Heart Association
8415 Wurzbach Road
San Antonio, Texas 78229
210-614-4121

American Cancer Society
8115 Datapoint
San Antonio, Texas 78229
210-614-4211

*A Methodist Hospital facility
Outpatient Cardiac Rehabilitation Services in San Antonio and South Central Texas

**Methodist Specialty and Transplant Hospital**  
8026 Floyd Curl Drive, San Antonio, Texas  78229  
(210) 575-8235

**Christus Santa Rosa Hospital - Medical Center**  
2827 Babcock, San Antonio, Texas  78229  
(210) 705-6516

**Hill Country Memorial Wellness Center**  
1006 Hwy 16 South, Suite E, Fredericksburg, Texas  78624  
(830) 997-1358

**Heart of the Hills**  
**Sid Peterson Regional Health Care Center**  
200 Sidney Baker, Kerrville, Texas, 78208  
(830) 257-6363

**Gonzales Memorial Hospital**  
1110 Saran Dewitt, Gonzales, Texas  78629  
(830) 672-7581

**McKenna Sports Fitness and Rehab Center**  
750 Landa, Suite A, New Braunfels, Texas  78130  
(830) 606-3658

**Guadalupe Valley Hospital**  
1215 E. Court Street, Seguin, Texas  78155  
(830) 401-7414

**South Texas Regional Rehabilitation Center**  
1240 W. Oaklawn, Pleasanton, Texas  78064  
(830) 569-8100

**Laredo Cardiac Rehabilitation**  
1700 E. Saunders, Laredo, TX  78044  
(956) 796-2158

**Christus Spohn Hospital Corpus Christi - Shoreline**  
600 Elizabeth St., Corpus Christi, TX  78404  
(361) 881-3633
Heart Failure Glossary

ACE (angiotensin converting enzyme) inhibitors — A type of heart failure medication that works by preventing the body from creating angiotensin, a substance in the blood that causes vessels to tighten and raises blood pressure. In large-scale studies, ACE inhibitors have been proven to slow the progression of heart failure.

Advance Directive — A written document that states a person’s healthcare choices and names someone to make those choices, should the person become unable to make their own decisions about medical care. The most common types of Advance Directives are a living will and a durable power of attorney for healthcare.

Anemia — A reduction in the amount of oxygen-carrying red blood cells. Anemia can have many causes, but the most common is a lack of iron in the body. Also known as iron-poor blood.

Angiography — An X-ray test used to detect diseases of the blood vessels, such as weakening of the vessel walls and the narrowing or blocking of vessels. The X-ray is taken after the vessels have been injected with a substance that allows them to be seen on film.

Angioplasty — A procedure that reopens blocked blood vessels to the heart. A physician inserts a hollow needle (catheter) into the diseased artery and pushes a small deflated balloon into the blocked section. Then the physician inflates the balloon to widen the artery.

Angiotensin II receptor blocker — A medication that blocks the action of a special chemical called angiotensin, which normally raises the heart rate and blood pressure.

Arrhythmia — An abnormal rhythm or rate of the heartbeat caused by disturbances in the movement of electrical impulses through the heart.

Atrial fibrillation — Rapid, uneven contractions in the upper heart chambers (atria), which cause the lower chambers (ventricles) to beat irregularly.

Atrium — One of the two upper chambers of the heart.

Beta blockers — Medications that reduce the heart’s tendency to beat faster by blocking specific receptors (“beta receptors”) on the cells that make up the heart.

Blood thinners — Medications, such as warfarin and heparin, used to prevent blood clotting. Some people with heart failure are prescribed blood thinners to reduce the risk of stroke.

Calcium channel blocker — A drug that prevents calcium from entering the heart’s muscle cells. This causes the muscles to relax, lowering the heart rate.

Cardiac rehabilitation — A supervised program of increasing exercise, mental support and training to allow a person with a heart condition to resume normal activities.
Cardiologist — A doctor who diagnoses and treats heart problems.

Cardiomyopathy — Any weakening or deformity of the heart muscle that causes decreased pumping force. This leads to less-efficient circulation of blood through the lungs and the rest of the body.

Cardiomyoplasty — An investigational surgical treatment for heart failure that involves taking muscles from the person’s back or abdomen and wrapping them around the heart. Its goal is to increase the heart’s pumping power.

Caregiver — Anyone who helps a chronically ill patient cope with an illness. Caregivers can be home healthcare workers, family members or friends. They assist in many ways, from making sure patients take their medications properly to helping out with day-to-day activities.

Chronic illness — An illness or condition that develops slowly and persists for a long time. Heart failure is almost always a chronic illness.

Congenital heart disease — Any heart condition or abnormality that a person was born with.

Congestive heart failure — A common form of heart failure that results in a patient retaining excessive fluid, often leading to swelling of the legs and ankles and congestion in the lungs.

Coronary artery bypass — A procedure used to reroute the blood supply around a blocked section of a coronary artery. Surgeons remove healthy blood vessels from another part of the body, such as a leg or the chest wall. Then they surgically attach the vessels to the diseased artery to let the blood flow around the blocked section.

Coronary artery disease — A condition caused by thickening of the walls of the arteries that supply blood to the heart muscle. When these arteries become blocked, the heart is deprived of oxygen and can become damaged. Severe cases can result in heart attack.

Defibrillator — A device that delivers pacing or an electric countershock to the heart when an abnormal rhythm is detected. A surgically implantable version is called a pacemaker.

Diabetes — A condition in which the body doesn’t produce the right amount of insulin, the hormone that allows cells to absorb glucose (sugar) from the bloodstream. Some people with diabetes must inject themselves with insulin every day to maintain a healthy glucose level. Others are able to control the condition with pills or a special diet.

Diastolic pressure — The pressure of blood inside arteries when the heart is at rest. This is the bottom number in a blood pressure reading.

Digoxin (or digitalis) — A medication that increases the force of the heart’s contractions and slows certain types of irregular heartbeats (arrhythmia).

Diuretic — A medication that promotes the formation and release of urine. It helps to reduce fluid overload in people with heart failure. Also called a water pill.
**Drug interaction** — A change in the effect of a drug when taken with a certain other drug or food. Its effect may increase or decrease, or a side effect may occur.

**Dyspnea** — Difficult or labored breathing, often caused by heart conditions.

**Dysrhythmia** — A disturbance in heart rhythm, sometimes used as an alternative to the term “arrhythmia.”

**Echocardiography** — A test that obtains an image of the structure and motion of the heart using ultrasound (inaudible, high-frequency sound waves). Used to detect cardiomyopathy and other abnormalities of the heart wall, valves and large blood vessels.

**Edema** — An abnormal accumulation of fluid in body tissues. Edema is common in the legs, ankles and lungs of people with heart failure.

**Ejection fraction** — The amount of blood released during each contraction of the lower ventricle of the heart. It’s usually expressed as a percentage: an ejection fraction of 60 percent means that 60 percent of the total amount of blood in the left ventricle is expelled with each heartbeat.

**Electrocardiogram (EKG or ECG)** — A record of the electrical activity of the heart, allowing diagnosis of abnormal heart conditions.

**Endocarditis** — Inflammation of the lining of the heart and the heart valves, usually due to bacterial infection.

**Heart attack** — Sudden death of a portion of the heart muscle caused by a sudden decrease in blood supply to that area. Also known as myocardial infarction or MI.

**Heart disease, ischemic** — The most prevalent form of heart disease, in which narrowed or blocked coronary arteries result in decreased blood supply.

**Heart failure** — The inability of the heart to keep up with its workload. When someone has this condition, their heart can’t pump enough blood to the lungs and the rest of the body. Heart failure is often a chronic condition that can be treated with medications, diet and other lifestyle changes, and in some cases, surgery.

**Heart transplant** — Surgery that replaces a damaged heart with a healthy heart taken from a donor who has been declared brain dead.

**Heart valve** — One of the four structures in the heart that control the flow of blood by opening and closing with each heartbeat. The valves permit blood to flow in only one direction.

**Hypertension** — The medical term for abnormally high blood pressure.

**Hyperthyroidism** — Overactivity of the thyroid gland, leading to overproduction of thyroid hormones. It can make the body’s metabolism overactive, leading to symptoms such as weight loss and rapid heart rate.

**Hypotension** — Abnormally low blood pressure.
**Left-ventricular assist device** — A mechanical pump used to aid the natural pumping action of the heart’s left ventricle.

**Left-ventricular heart failure** — Heart failure in which the left side of the heart must work harder to pump the same amount of blood. This type of heart failure usually causes breathing difficulties.

**MUGA (Multigated Acquisition)** — A test in which a radioactive tracer is injected into the bloodstream and scanned as it passes through the heart. A computer then calculates the size and shape of a patient’s ventricles based on the amount and distribution of radiation they emit.

**Myocardial infarction** — Sudden death of a portion of the heart muscle caused by a sudden decrease in blood supply to that area. See Heart attack.

**Myocarditis** — Inflammation of the heart muscle.

**Potassium** — A mineral that, together with sodium and calcium, regulates the body’s water balance, maintains normal heart rhythm, and is responsible for nerve impulse conduction and muscle contraction.

**Primary care doctor** — A general internist or family physician who provides patients with routine preventive health care and is their first contact when medical problems arise.

**Pulmonary edema** — Fluid in lung tissues, often caused by congestive heart failure.

**Right-ventricular heart failure** — Heart failure caused by damage to the right-side chambers of the heart, leading to decreased blood flow, and swelling in the hands, legs and abdomen.

**Side effect** — Any reaction that results from a medication or therapy. Heart failure medications can cause side effects such as headaches, nausea, dizziness, kidney complications and low blood pressure.

**Sodium** — A mineral that, together with potassium and calcium, regulates the body’s water balance, maintains normal heart rhythm, and is responsible for nerve impulse conduction and muscle contraction. Excessive intake of sodium from food contributes to high blood pressure in some people. In people who already have high blood pressure, too much sodium may increase the risk of stroke, heart disease and kidney damage.

**Stress test** — An exercise test that examines how well the heart works. Patients are asked to walk on a treadmill to increase their heart rate. During the test, a doctor monitors electrocardiogram (ECG or EKG) readings from the heart to check for any heart rhythm irregularities.

**Systolic pressure** — The pressure of blood inside arteries when the heart contracts. This is the top number in a blood pressure reading.

**Vaccine** — Weakened or dead germs, given by injection, that protect against infectious disease. People with heart failure should receive a yearly influenza vaccine and a one-time pneumococcal vaccine (to guard against pneumonia).
Valve replacement — Surgery to replace a defective or diseased heart valve.

Vasoconstriction — A narrowing of a blood vessel, causing decreased blood flow to a part of the body.

Vasodilator — A medication that causes widening or relaxation of blood vessel walls. Examples include ACE inhibitors, angiotensin II receptor blockers, beta blockers, calcium channel blockers, natriuretic peptides and nitrates.

Ventricle — One of the two lower chambers of the heart that receive blood from the atria (upper chambers). The right ventricle pumps blood to the lungs and the left ventricle pumps blood to the rest of the body.
NOTES
# Home Monitoring Log

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Home Monitoring Log

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Acknowledgements

Special thanks to all the individuals who contributed to this handbook.

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