

# Understanding Exercise, Diet and Lung Disease



An educational health series from





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# Understanding Exercise, Diet and Lung Disease

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## About Your Lungs and Chronic Lung Disease

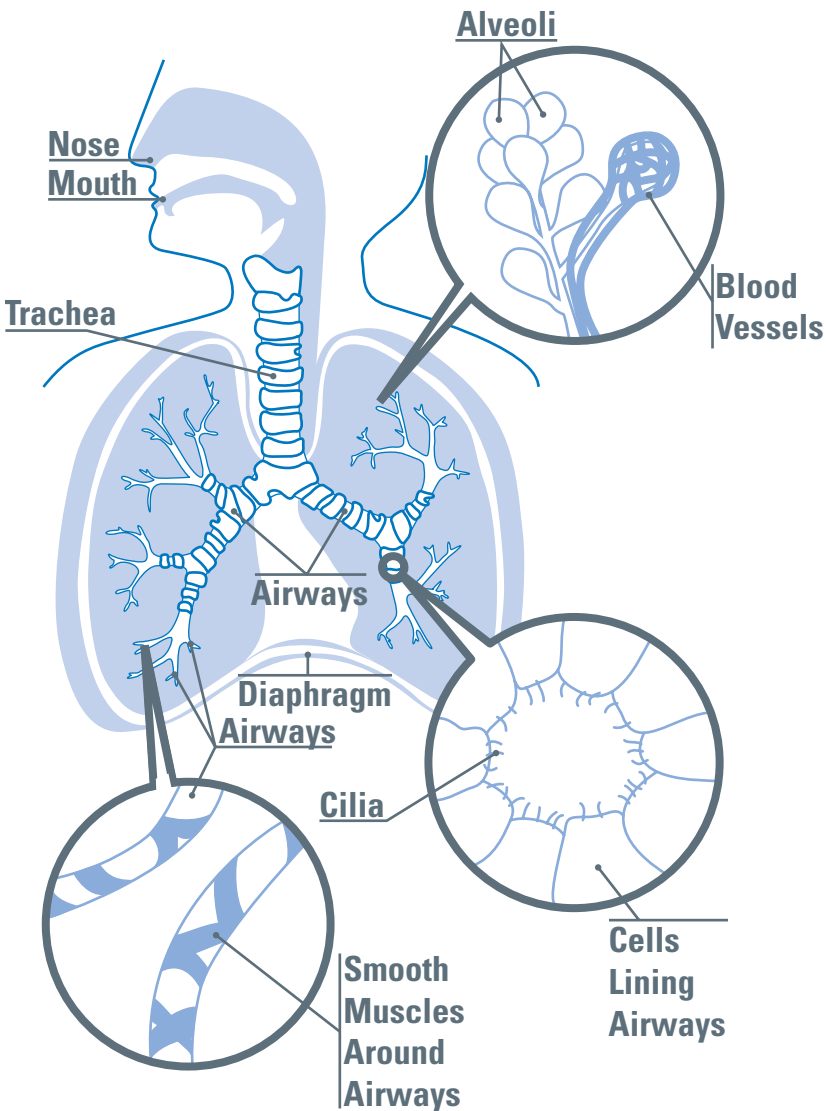
### Your Lungs and How They Work

Your lungs are part of the system for breathing. This is the respiratory system. The respiratory system serves to provide oxygen to the blood, which the heart pumps throughout the body. It also removes carbon dioxide, a gas your body does not need, from the blood. In addition to the lungs, you need the mouth and nose, the trachea and diaphragm to breathe.

As the diagram on the right illustrates, when you inhale, fresh air enters through the nose and mouth and travels to the lungs via the windpipe (trachea). Once in the lungs, the air moves through a series of smaller and smaller airways. These airways are lined with cilia (hairlike structures) and cells that produce mucus. The cilia is coated by a layer of mucus and beats in a rhythmic fashion to clean the lungs. The airways are also surrounded by smooth muscle. At the end of the airways are grape-like sacs, called alveoli.

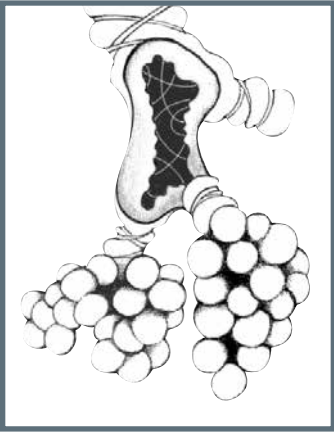
## About Your Lungs and Chronic Lung Disease

It is here, at the alveoli, where oxygen moves from the alveoli into the blood. The oxygen travels to all the cells of the body. Carbon dioxide moves from the blood to the alveoli and is exhaled. The dome-shaped muscle under the lungs is called the diaphragm. As the diaphragm contracts and relaxes with each breath, the pressure changes in the lungs and causes air to move in and out of the lungs.

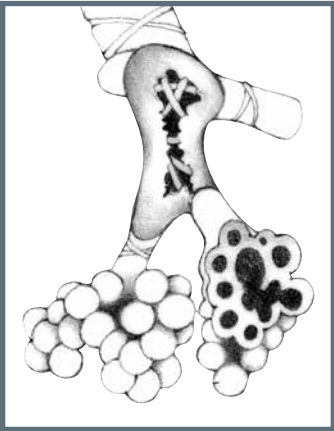


### What Is Chronic Lung Disease?

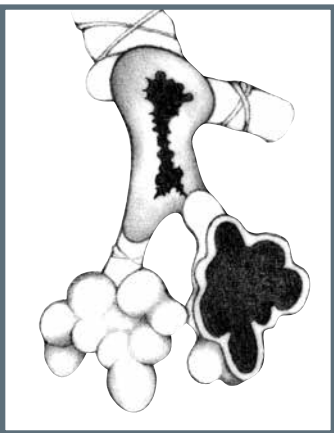
Chronic lung disease is a general term used to describe long-term illnesses of the breathing system. Diseases such as asthma, chronic bronchitis and emphysema are chronic lung diseases. Millions of people in the United States have chronic lung disease. Chronic lung disease affects people of all ages and walks of life.



Asthma



Chronic Bronchitis



Emphysema

#### ASTHMA

Airways with asthma are swollen and inflamed. This obstructs airflow through the lungs. Asthma airways are also very sensitive to things that can make asthma worse. The tightening of muscles that surround the airways and mucus production inside the airways cause further airway obstruction. Symptoms can include coughing, wheezing, shortness of breath and chest tightness.

#### CHRONIC BRONCHITIS

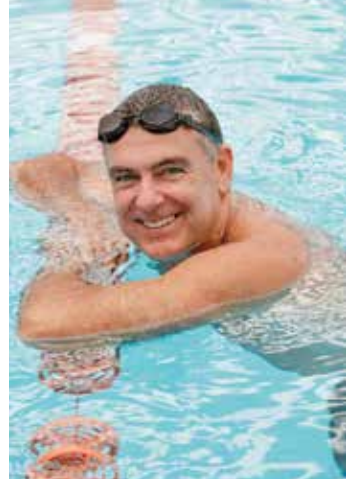
In chronic bronchitis, there is a chronic cough and chronic mucus production. The airways in the lungs become swollen, irritated and produce more mucus. The earliest symptom of chronic bronchitis is a cough with mucus production.

#### EMPHYSEMA

In emphysema, there is damage to the walls of the alveoli (air sacs) in the lungs. This results in a smaller total number of normal alveoli. The alveoli are not able to transfer oxygen into the bloodstream as well as healthy alveoli. Because of this damage, the lungs lose their elasticity. Elasticity is the ability of the alveoli to stretch and get smaller with breathing.

## About Your Lungs and Chronic Lung Disease

The earliest symptom of emphysema is shortness of breath with activity. Later symptoms with emphysema and chronic bronchitis include shortness of breath with mild activity and rest. These and other chronic lung diseases can be controlled. A well-rounded rehabilitation program that includes education, exercise and eating well can help you stay healthy and feel good.



A well-rounded rehabilitation program that includes education, exercise and eating well can help you stay healthy and feel good.



## **Beginning and Maintaining an Exercise Program**

While sometimes worrisome and inconvenient, chronic lung disease can be managed. A rehabilitation program that involves a healthy lifestyle of exercise, eating well and smoking cessation will improve your quality of life and increase your tolerance to activity. With a basic understanding of your disease and good medical care, you can improve your lung health. That's our treatment goal at National Jewish Health – to teach patients and their families how to manage chronic lung disease so they can lead full and active lives.



### What Are Your Rehabilitation Goals?

It is important to set a few goals that you can reach as you start or resume your rehabilitation program. Think about the different aspects of your life and where you would like to make changes.

- Would you like to exercise on a regular basis and feel good doing it?
- Would you like to be less short of breath?
- Would you like to learn how to select and prepare healthy meals?
- Would you like to lose or gain weight?

These are common goals for many people with chronic lung disease. What are your goals?

**List your goals below.**

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You can reach your goals! You can take control of your chronic lung disease. Work with your healthcare team and focus on reaching your goals.

### Why Should You Exercise?

Exercise and staying active are an important part of rehabilitation for chronic lung disease. You may believe that people with chronic lung disease are too short of breath to exercise. This is a myth. The truth is that regular exercise can help you feel less short of breath. Regular exercise improves your heart and muscles. It can help you feel good about yourself. Exercise specialists at National Jewish Health developed this list of the benefits of exercise. Remember, exercise is good for you!



Exercise will put you on a path to better health.

#### EXERCISE INCREASES

- Energy level
- Endurance (Cardiopulmonary)
- Muscle strength
- Bone density
- Ability to fight infection
- Ability to relax
- Restful sleep

#### EXERCISE DECREASES

- Shortness of breath
- Risk factors of heart disease
- Blood pressure
- Side effects of medicine (steroids)
- Depression
- Blood sugar levels

### How Do You Start an Exercise Program?

If you have been exercising on a regular basis, the following information will help you improve your exercise program. If you are over the age of 35, and have not exercised regularly, make an appointment to see your doctor before you start an exercise program.

Your doctor will help you develop an exercise program to meet your goals. This program will put you on the path to better health. As part of your exercise program, your doctor may prepare written guidelines not only on how to get started, but also how to continue your progress. Be sure to ask questions and discuss any concerns you may have.

Your doctor may refer you to a rehabilitation program. A rehabilitation program is a program to restore your health and quality of life through education, exercise and proper nutrition. You may work with a variety of healthcare providers in a rehabilitation program; Physical Therapists, Occupational Therapists, Recreational Therapists, Nurses and Registered Dietitians.

Once in a rehabilitation program you will complete an evaluation to make sure you are ready to begin an exercise program with the least risk of injury. Members of the rehabilitation team will design the right exercise program for you.

### What Should An Exercise Program Include?

The components of an exercise program should include:

- Warm-up
- Endurance (Cardiopulmonary) Exercise
- Resistance (Strengthening) Exercise
- Flexibility (Stretching) Exercise
- Cool-down

The following pages will give you more information about each component.



If you are over the age of 35, and have not exercised regularly, make an appointment to see your doctor before you start an exercise program.

### WARM-UP AND COOL-DOWN

Warm up and cool-down are usually 5 to 10 minutes and may involve gentle stretching or exercise at a lower intensity or workload. It prepares your heart, lungs and muscles for the work to be done during exercise and cools them after a workout to prevent muscle soreness or injury.



Consider choosing an activity you can do with a friend or family member.

### ENDURANCE (CARDIOPULMONARY) EXERCISE

Your exercise program will include a walking or cycling program that is designed to improve your endurance so that you can do the tasks you enjoy with less shortness of breath. This portion of your program is the cornerstone. Endurance exercises are needed to decrease the breathlessness and fatigue you experience with daily activities.

A thorough program will include endurance exercises for your arms and your legs. You should perform this routine five to seven times per week and your rehabilitation team and doctor will assist you in mastering how to adjust the time, effort and frequency needed to improve and maintain a feeling of health and fitness.

Creating the exercise habit will come easier if you choose an activity you will enjoy. Consider choosing an activity you can do with a friend or family member.

### RESISTANCE (STRENGTHENING) EXERCISE

Resistance or strength training is recommended to improve or maintain our ability to perform the activities of daily living at home, work and play. Muscle strength and endurance impact our posture and our ability to perform sustained work or recreational activities. Without good muscle strength, we cannot perform the activities that require effort over time.

The old adage, Move It or Lose It!, applies here. Your exercise program for strength should include all of the major muscle groups of your trunk, legs and arms. Typically this can be accomplished with 10 to 15 exercises. You can use flexible exercise bands, free weights, or machines to increase the resistance and challenge yourself to improve. You can also use canned goods and other household items initially while forming the exercise habit.

### FLEXIBILITY (STRETCHING) EXERCISE

Gentle stretching exercises can be used as a warm-up or cool-down activity. Stretching can be done on a daily basis. Move into the stretch position until you feel a gentle stretch or awareness in the target muscle. Hold for 10 to 30 seconds — DON'T BOUNCE!

### What Kinds of Exercise Can You Do?

When selecting an exercise, choose something you enjoy. If you enjoy walking, begin your exercise program with walking. If you enjoy the water, swimming may be a good sport for you. Build your exercise program around the types of activities you enjoy.

You also should choose an activity you can do easily in your environment and as part of your lifestyle. For example, if you live near a park or lake, walking or biking around the trails may be both enjoyable and convenient. If you belong to a health club and enjoy the social aspect of exercising with friends, using the treadmill machines, taking exercise classes or playing tennis would fit into your lifestyle. If you live in a cold climate, you might consider walking in the shopping mall. Some shopping malls have “mall-walker” programs and incentives.



You can use flexible exercise bands, free weights, or machines to increase the resistance and challenge yourself to improve.

In addition to what you enjoy, look at what you need to be able to do. Your exercise program can include a variety of activities specific to your goals.

### YOUR PERSONAL EXERCISE PROGRAM MAY INCLUDE:

- Types of activity (stretching, strengthening, endurance)
- How often to do each activity (frequency)
- How long to do each activity (duration)
- How hard and how many of each type of activity to do (intensity)
- Medicines to take before exercise

### THE RATING PERCEIVED EXERTION SCALE

The Rating Perceived Exertion Scale (RPE) can help you determine how hard you are exercising (intensity). Typically a perceived exertion of moderate (RPE3) or somewhat strong (RPE4) is recommended. This is a guideline for exercise intensity.

#### Rating Perceived Exertion Scale (Intensity of Activity)

0	Nothing at all	5	Strong (heavy)
0.5	Very, very weak (just noticeable)	6	Very strong
1	Very weak	7	Very strong
2	Weak (light)	8	Very strong
3	Moderate	9	Very, very strong (almost maximal)
4	Somewhat strong	10	Maximal

To use the Rating Perceived Exertion Scale try to think of how hard the activity is. Think of how hard the activity feels and how tired you are. Try not to focus on one feeling such as leg pain or shortness of breath. How does your whole body feel. What number relates to how you feel? Think honestly and objectively about how you feel.

## Your Personal Exercise Program

Ask your doctor or healthcare team to help you start your program.

### ENDURANCE (CARDIOPULMONARY) EXERCISE

Walking             Cycling  
 Treadmill         Other (specify) \_\_\_\_\_  
Frequency:        \_\_\_\_\_ days per week  
Duration:         \_\_\_\_\_ minutes per session  
Intensity:         \_\_\_\_\_ 1 - 10

### RESISTANCE (STRENGTHENING) EXERCISE

Frequency:        \_\_\_\_\_ days per week  
Duration:         \_\_\_\_\_ minutes per session  
Intensity:         \_\_\_\_\_ 1 - 10

### FLEXIBILITY (STRETCHING) EXERCISE

Frequency:        \_\_\_\_\_ days per week  
Duration:         \_\_\_\_\_ minutes per session  
Intensity:         \_\_\_\_\_ 1 - 10

### NOTES

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### PURSED-LIP BREATHING

If you have Emphysema or Chronic Bronchitis pursed-lip breathing is another part of your rehabilitation program. By practicing pursed-lip breathing, you can move more air in and out of your lungs more easily. This will help you feel less short of breath.



Set small goals that you can reach and celebrate when you reach them.

Practice this exercise every day. Do pursed-lip breathing when you feel short of breath. It will help you think about your breathing and relax. Also, do pursed-lip breathing when you are active.

1. Breathe in slowly through your nose with your mouth closed. Try to breathe in a normal amount of air.
2. Purse your lips lightly, like you are going to whistle.
3. Exhale slowly through your mouth. Breathe out for twice as long as you breathe in.

Do not take in a large deep breath. Never try to force all the air out of your lungs.

### How Can You Stay Active?

Staying active presents a challenge to all types of people. Many people find it difficult to maintain an exercise program. The key is do not give up. If you skip a day, or even a week, it's okay. You can start right back where you left off.

As we discussed, pick an activity that works well with your interests, lifestyle and what is available. Start your exercise program slowly to build up your strength and endurance. Avoid doing a month's worth of exercising in the first week. You will get burned out and possibly injured if you begin too fast.



## Beginning and Maintaining an Exercise Program

Make exercise a priority. Choose activities you enjoy. It is an important part of your life. Make time for it each day and you will see the benefits. If you are active, you will have the energy to accomplish more each day.

Set exercise goals for yourself. Walking around several blocks, a half-mile or even a mile, is a goal worth working toward. Set small goals that you can reach and celebrate when you reach them. Many people enjoy being in community walks, mall walks, bike tours, swim-a-thons, family outings and fun runs. If there is nothing available in your community, plan events with your family and friends to stay interested in your exercise program.

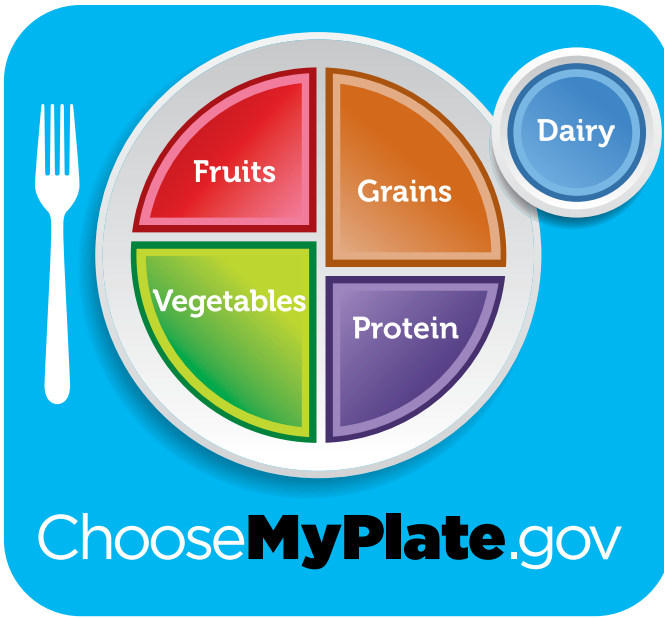


## Eating Well and Maintaining a Healthy Weight

Another important part of rehabilitation for chronic lung disease is eating well. This involves choosing healthy foods that can work to heal and repair your body and make it stronger against disease. In this section we will explore how to eat healthy and achieve a healthy body weight.

In order to educate Americans on the importance of healthy eating and exercise, the USDA and the US Department of Health and Human Services developed the Choose My Plate Food Guide. The Choose My Plate Food Guide helps you choose the foods and amounts that are right for you, and encourages you to be active every day.

Your food choices and activity level affect your health – both now and in the future. To adopt a healthy lifestyle and maintain a healthy weight, set daily nutrition and activity goals.



Suggestions for daily goals:

- Increase daily intake of fruits and vegetables. The goal is to eat 2 pieces (or 2 cups) of fruit and 2 – 3 cups of vegetables every day. Fruits and vegetables are key sources of vitamins and minerals that keep your immune system strong and help your body heal itself.
- Eat at least 3 servings of whole grain foods each day. A serving equals 1 slice of bread, 1 cup of cereal or 1/2 cup of rice. For maximum health benefits, choose whole grain breads and cereals, and wild or brown rice. Look at labels and choose foods that have high amounts of fiber.
- Know your fats! We need 20-30% of our total calories from fat in order to keep our cells and body healthy. Choose unsaturated fats from vegetables, such as olive oil and canola oil, peanut butter, nuts, avocados. Unsaturated fats can lower cholesterol levels, while saturated fats cause increased cholesterol levels and are associated with



Visit [ChooseMyPlate.gov](https://www.choosemyplate.gov) and create a personalized food guide that's just right for you!

heart disease. Saturated fats are found in animal products, such as meats and dairy foods. Limit saturated fat by choosing lean meats, fish and low-fat dairy foods.

- Remember portion control. To help control portion sizes, eat off of smaller plates. When eating out, take 1/2 the meal home or share an entrée with a friend. Instead of eating a second helping, have a piece of fruit for dessert.

For more suggestions on a healthy diet, and understanding serving sizes, visit [ChooseMyPlate.gov](https://www.choosemyplate.gov) and create a personalized food guide that's just right for you!

Living a healthy lifestyle and following the Choose My Plate Food Guide is important for people of all ages, with and without chronic lung disease. Talk to your doctor or a registered dietitian about your specific nutrition needs.

### **Maintaining Your Weight**

Achieving and maintaining a healthy weight is an important part of treating chronic lung disease. Excess body weight, especially around your stomach, can increase shortness of breath. Insufficient body weight can decrease your ability to fight infections. A good way to determine if you need to gain or lose weight is to look at your body mass index or BMI.

#### **WHAT IS BODY MASS INDEX OR BMI?**

BMI is a calculation of weight relative to height. It is helpful to know your BMI because it can be used as an indicator of overall health. BMI does not account for body composition of muscle and fat. BMI may overestimate body fat in an athlete or a person with

a muscular build. BMI may underestimate body fat in an elderly person or a person with loss of muscle mass. Overall, BMI is a useful tool to help guide recommendations for weight loss or weight gain.

### HOW CAN YOU FIND OUT YOUR BODY MASS INDEX?

Ask your healthcare provider about your BMI. Your healthcare provider can calculate this for you. You can also look at a BMI calculator or table. You can access a BMI calculator or table at this website: [www.nhlbisupport.com/bmi](http://www.nhlbisupport.com/bmi). Another option for finding your BMI is calculating it yourself. See the instructions below. You may want to use a calculator.

To calculate your BMI follow these steps:

1. Determine your weight in kilograms.

$$\frac{\text{weight in pounds}}{\text{weight in kilograms}} \div 2.2 = \frac{\text{weight in kilograms}}{\text{weight in kilograms}}$$

*Example:*  $130 \div 2.2 = 59.1$

2. Determine your height in meters.

$$\frac{\text{height in inches}}{\text{height in meters}} \times 0.0254 = \frac{\text{height in meters}}{\text{height in meters}}$$

*Example:*  $65 \times 0.0254 = 1.65$

3. Determine your height in meters<sup>2</sup>.

$$\frac{\text{height in meters}}{\text{height in meters}} \times \frac{\text{height in meters}}{\text{height in meters}} = \frac{\text{height in meters}^2}{\text{height in meters}^2}$$

*Example:*  $1.65 \times 1.65 = 2.7225$

4. Determine your BMI.

$$\frac{\text{weight in kilograms}}{\text{height in meters}^2} \div \frac{\text{height in meters}^2}{\text{height in meters}^2} = \frac{\text{BMI}}{\text{BMI}}$$

*Example:*  $59.1 \div 2.7225 = 21.7$

### WHAT DOES THE BMI NUMBER MEAN?

Once you know your BMI, determine what category you are in:

- Underweight: BMI < 18.5
- Normal weight: BMI 18.5-24.9
- Overweight: BMI 25.0-29.9
- Obese: BMI > 30

If your BMI is above 25, focus on losing weight.

If your BMI is below 18.5, focus on gaining weight.

### HOW CAN YOU LOSE WEIGHT?

If weight loss is your goal, focus on establishing a plan that includes a variety of foods. Avoid using the word “diet” as a diet is something you go on and then go off. Try to make healthy lifestyle changes you can maintain for the long term. A healthy rate of weight loss is ½-1 pound per week. Rapid weight loss usually results in loss of fluid or muscle rather than body fat.

Here are some weight loss tips:

- Do not skip meals.
- Include 3 food groups with each meal.
- Limit snacks to designated times, often mid-morning and mid-afternoon.
- Limit sweetened beverages to no more than 12 ounces a day. This includes juice, soda, Kool-Aid and lemonade to name a few.
- Keep high fat or high sugar foods out of the house.
- Limit serving sizes. Refer to the package for information on serving size.
- Be aware that most of today’s foods come in super-sized versions that are not helpful for weight control. Resist the temptation to super-size your order or to purchase super sized food items. Share an entrée when dining out.

- Limit use of high calorie condiments such as mayonnaise or salad dressing. Use lower calorie versions instead.
- Increase activity to help strengthen your body and lose weight. Remember what you learned in exercise section of this book.
- Meet with a registered dietitian (RD) for additional advice on meal planning.

### HOW CAN YOU GAIN WEIGHT?

The best way to gain weight is to eat more. However people with lung disease often feel full after eating a relatively small amount of food. If this is happening to you, try to eat smaller amounts more often. In addition, try to add calories to everything you eat with extra sauces and gravies.

Here are some tips for weight gain:

- Eat five to six small meals a day and snack whenever you are hungry.
- Keep your favorite foods on hand for snacking and meals (such as frozen dinners).
- Fat is a concentrated source of calories. Small amounts of vegetable oil, butter or margarine can increase the calorie content of any food.
- Use higher calorie versions of foods you eat (butter crackers or cheese crackers instead of soda crackers).
- Avoid “lite” products (skim milk, low fat yogurt and cottage cheese, reduced calorie mayonnaise, low-fat salad dressings, etc).
- Don’t fill up on fluids. Drink fluids between meals rather than with meals. Drinking during a meal can make you feel full quickly.
- Avoid filling up on low calorie foods like salad at meal times; instead eat the heartier foods first.

### Suggested Calorie Boosters

- butter/margarine
- cream cheese
- dried fruit
- dry milk powder
- granola
- honey/sugar
- peanut butter/nuts
- vegetable oils

- Choose nutritious drinks, such as whole milk, milkshakes, and juices. Consider supplemental drinks such as Boost®, Ensure®, or Scandishake®.
- Meet with a registered dietitian (RD) for additional advice on meal planning.

### **Pull Up a Chair! It's Time To Eat.**

If you find yourself short of breath at mealtimes, this section is for you. Shortness of breath can make eating hard work. If you use all your energy preparing a healthy meal, you may find yourself unable to eat and/or enjoy what you have prepared.



Smaller, more frequent meals are recommended for people with chronic lung disease.

Here are a few practical suggestions on how to conserve energy and get the most from your meals:

- Eat six smaller meals instead of three big meals. Frequent meals are recommended since many people with chronic lung disease feel more short of breath when their stomach is full. This is because the diaphragm can not work as well when the stomach is full. You can satisfy your nutritional needs, keep your stomach comfortable and help your diaphragm to work better by eating smaller amounts more often.
- Plan to eat before you are too hungry or tired.
- If you do not have an appetite, use the clock to remind you when it's time to eat. Think of food as medicine, and do your best to eat “healthy” foods throughout the day. Try to eat something every 2-3 hours, and do not go longer than 4 hours without eating.
- Breathe evenly while you are chewing and eating. Stop eating if you need to catch your breath. Relax at mealtime.
- When cooking or baking, double or triple your favorite recipes to keep your freezer full for times when you do not feel like cooking.



## Eating Well and Maintaining a Healthy Weight

- Freeze foods in small portions for when you do not feel like cooking.
- Use prepared foods to save time and energy in the kitchen. Frozen meals, prepared foods or take-out meals from a restaurant can make your life easier. Remember, the sugar, salt or fat content of these foods may be higher than homemade.
- Do the tasks that require the most effort when you have the most energy. For example, many people would agree that grocery shopping is a tiring task. This chore can be done when you feel freshest, in the morning or after a rest. Better yet, make a list and have a friend or family member pick up your groceries for you!
- Don't stand in the kitchen when you can sit. Bring your chopping, cutting and mixing projects over to the kitchen table and sit while you prepare the food or keep a barstool by the kitchen counter.

Another way to avoid that “too full” feeling is to eat less of the foods that cause gas. The following foods are common offenders. Keep a food diary to find out if they are a problem for you.

- |                                      |                          |
|--------------------------------------|--------------------------|
| • asparagus                          | • garlic                 |
| • beans (pinto, kidney, black, navy) | • onions (raw)           |
| • broccoli                           | • peas (split, blackeye) |
| • brussels sprouts                   | • peppers                |
| • cabbage                            | • radishes               |
| • carbonated drinks                  | • rutabagas              |
| • cauliflower                        | • sausage                |
| • cucumbers                          | • spicy foods            |
| • melons                             | • turnips                |



## Living with Chronic Lung Disease

### Gastroesophageal Reflux

Many people with chronic lung disease also have gastroesophageal reflux disease (GERD). Gastroesophageal reflux is a backward flow or reflux of stomach contents into the esophagus. This occurs when the valve of smooth muscle between the esophagus and the stomach does not function properly. This muscle band is called the lower esophageal sphincter.

### SIGNS AND SYMPTOMS OF GERD

Some signs and symptoms of GERD include heartburn, sour taste in the mouth or swallowing problems, but many people with GERD may have no symptoms, but worsening lung disease.

### TREATMENT FOR GERD

The following treatments may be recommended:

#### Lifestyle changes

- If you are overweight, talk with your healthcare provider about losing weight.
- If you smoke, giving up smoking is important. Your healthcare provider will have ideas to help you quit.

#### Dietary measures

- Limit citrus and tomato products, strong spices, caffeinated drinks, carbonated drinks, fatty foods, chocolate, mint and alcohol.
- Eat smaller, more frequent meals rather than three large ones.
- Avoid food or liquids for 2-3 hours before bedtime.

#### Physical measures

- Elevate the head of the bed 6-8 inches, by placing blocks under the legs of the head of the bed.
- Avoid bending forward at the waist.
- Avoid wearing tight fitting clothing.

#### Medications

In addition to the above measures, medications may be prescribed to help this condition also.

### Steroids and Diet

Some people with chronic lung disease take steroid pills on a regular basis. Steroid pills (such as prednisone or methylprednisolone) are strong medicines that decrease swollen airways. They also have the potential to interfere with the way the body uses specific nutrients, including calcium, potassium, sodium, protein and vitamins C and D.

If you take steroid pills for chronic lung disease, it is very important to eat a balanced diet that meets the Choose My Plate Food Guidelines. A healthy



You will do much better with your rehabilitation program if you have support.

diet that includes foods from each food group can make up for some of the nutritional effects of steroid therapy. Over a long period of time, steroid pills or liquids, can increase the risk of osteoporosis (loss of bone density). Therefore, it is very important to eat foods high in calcium, such as dairy products. If you do not get adequate calcium from foods, be sure to take a calcium supplement. If you need to control calories, low fat dairy products may be used. To prevent other side effects, limit the use of salt and foods that are high in sodium and decrease the amount of cholesterol and fats in your diet. In many cases, taking a multi-vitamin may help ensure adequate vitamin and mineral intake. Talk with your doctor or a registered dietitian about specific concerns regarding steroids and your diet.

### Support and Your Family

Chronic lung disease rehabilitation requires an active partnership. Taking your medicine, staying active, eating healthy and working with your doctor are important. You will do much better with your rehabilitation program if you have support.

Support can come in a variety of forms. Your family is often a support group. Your spouse, adult children, siblings or other relatives can help you meet the demands of your rehabilitation program on a daily basis. Other support groups include friends, people with chronic lung disease, people with whom you share a hobby, church groups and clergy, neighbors, volunteer organizations and even a pet! Do not be embarrassed or afraid to ask people for help when you need it.

### You Can Do It!

This booklet has taught you about your lungs and how they work. It discusses exercise, staying active, healthy eating and maintaining your weight with chronic lung disease. All of this information can help you take control of your lung disease and your life. Be sure to talk with your doctor if you have questions about this book. Your doctor is your partner in taking care of your chronic lung disease.

Remember the goals you set at the beginning of this booklet? Work toward your goals — make a little progress each day. You can feel better and stay healthy.

## Glossary

**ALVEOLI** “Grape-like” sacs at the end of the airways in the lungs. Oxygen and carbon dioxide move between the lungs and blood through the alveoli.

**ASTHMA** A chronic lung disease in which the airways of the lungs are swollen, blocked with extra mucus and the muscles around the airways are tight.

**CARDIOPULMONARY** Referring to the heart and lungs.

**CHRONIC BRONCHITIS** A chronic lung disease in which the airways of the lungs are swollen and blocked with extra mucus.

**CARBON DIOXIDE** A gas that is sent from the blood to the lungs to be exhaled.

**DIAPHRAGM** A large muscle under the lungs. The diaphragm moves up and down during breathing.

**DURATION** How long to do an activity.

**ELASTICITY** The ability of the alveoli to stretch and get smaller with breathing.

**EMPHYSEMA** A chronic lung disease in which the alveoli are damaged and trap air.

**ENDURANCE** Exercise to increase your ability to sustain an activity.

**ESOPHAGUS** The tube that connects the mouth and stomach.

**FATIGUE** Feeling weak or tired.

**FLEXIBILITY** Exercise to stretch muscles increasing bloodflow to the muscle.

**FREQUENCY** How often to do an activity.

**INTENSITY** How hard and how many of each type of activity to do. Intensity can be measured using Rating Perceived Exertion Scale.

**MUCUS** A thick fluid found in the airways.

**NUTRITIONAL INTAKE** The amount of food you eat, usually measured in calories.

**OSTEOPOROSIS** Loss of calcium in the bones.

**OXYGEN** A colorless, odorless and tasteless gas needed for life. After air is inhaled, oxygen is sent to the blood and to the cells for energy.

**RATING PERCEIVED EXERTION SCALE** A measure of the intensity of an activity. Intensity will vary on a scale of 1 (very easy) to 10 (maximal).

**REGISTERED DIETITIAN (RD)** A specialist in nutrition and food selection who is certified by the American Dietetic Association (ADA).

**REHABILITATION** To restore health and quality of life through education, exercise and diet.

**RESPIRATORY SYSTEM** Referring to the mouth and nose, trachea, lungs and diaphragm.

**SIDE EFFECTS** An unwanted effect of a medicine.

**STEROIDS** A strong, but effective medication used to treat asthma and other conditions.

**STRENGTH** Exercise using weights or other equipment to apply resistance to different movements.

**SYMPTOM** A sign of disease noticed by the patient.

**TRACHEA** The tube that connects nose and mouth to the lungs.



**If you would like more information  
about National Jewish Health,**

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