

GLOSSARY

Allergen: Any substance which induces or brings on symptoms of allergy. Among common allergens are: inhalants - dusts, pollens, fungi, smoke, perfumes; foods - wheat, eggs, milk products, nuts and peanuts; drugs - aspirin, antibiotics; infectious agents - bacteria, viruses, fungi; physical agents - heat, cold, light, and barometric pressure.

Alveoli: Air cells or sac-like structures in the lungs for the exchange of oxygen and carbon dioxide.

Bronchi: Main airways branching into left and right lungs.

Bronchospasm: Spasm of the bronchus causing varying degrees of breathing difficulty.

Capillaries: Minute blood vessels.

Chronic Obstructive Pulmonary Disease, (COPD): An inclusive term pertaining to chronic lung diseases of similar characteristics. Obstructive, as applied here, means difficulty with the exhalation portion of breathing and the retention of trapped air in the lungs.

Cilia: Hairlike projections which line the airways and wave rhythmically propelling mucus forward.

Conduction: Property by which substances transmit heat or electricity.

Diaphragm: Thin, sheet-like muscle separating the abdomen from the thoracic cavity. It is the principle muscle of breathing.

Edema: A condition in which the body tissues contain an excessive amount of tissue fluid.

Embolism: Obstruction of a vessel by an embolus.

Expectorate: To expell, as mucus, by coughing; to spit out.

Extremities: Arms and legs.

Humidity: Moisture in the atmosphere.

Hyperventilation: Abnormally prolonged, rapid and or deep breathing.

Intravenous: Within or into a vein.

Metabolism: Chemical change of nutriment taken into the body which reconverts such nutriments into simpler forms with release of energy.

Medium: Substance used for cultivation of microorganisms (germs).

Oxygen consumption: The volume of oxygen consumed by the body in one minute. Many factors determine the amount of oxygen to be consumed: temperature, stress, disease, physical activity. . .

Peak Flow Meter: An important tool in the management of lung diseases, especially asthma, because it allows patients to measure their own airway patency.

pH: In chemistry, a symbol used to express the degree of acidity or alkalinity. Alkaline or basic solutions range from pH 7 to pH 14; acid solutions range from pH 7 to pH 0.

Respiration: The exchange of oxygen and carbon dioxide in the body; in the lungs, between the cell and its environment and in the metabolism of the cell.

Systemic: Pertaining to or effective in the treatment of a disease.

Vaccine: A preparation introduced into the body to produce immunity to a specific disease by causing the formation of antibodies.

Viscous: Sticky, gummy.

REFERENCES

Advance for Respiratory Therapists, Vol. 2, No. 25, June 19, 1989.

Brody, Jane: *Jane Brody's Nutrition Book* (New York: Bantam Books, 1981).

Frownfelter, Donna L.: *Chest Physical Therapy and Pulmonary Rehabilitation* (Chicago: Year Book Medical Publishers, Inc., 1978).

Journal of American Medical Association, August 1, 1980; Vol. 244: No. 5.

Martin, Eric W.: *Hazards of Medication* (Great Britain: Blackwell Scientific Publications, 1971).

Mindell, Earl and Mundis, Hester: *Vitamin Bible* (New York: Warner Books, Inc., 1985).

Modrack, Marian: *Better Living and Breathing* (Saint Louis: The Mosby Company, 1975).

Moser, Kenneth M., et al.: *Shortness of Breath - A guide to Better Living and Breathing* (Saint Louis: The Mosby Company, 1983).

New England Journal of Medicine, June 1983; 308:1328-30.

Postgraduate Medicine (85 #6: 113, 1989).

Riedman, Sarah: *Food for People* (New York: Abelard-Schuman, 1976).

Rosenberg, Herold: *The Doctors' Book of Vitamin Therapy* (New York: G.P. Putman's Sons, 1974).

Ruppel, Gregg: Manual of Pulmonary Function Testing (The C.V. Mosby Company, St. Louis, Missouri, 1979).

Rusk, Howard A., et al.: A Manual for Training the Disabled Homemaker (New York University, 1961).

Schwartz, Leonard: Heavy Hands, The Ultimate Exercise System (Boston: Little Brown and Company, 1982).

Staff of Prevention Magazine: The Complete Book of Vitamins (Emmaus, PA: Rondale Press, 1977).

West. Carolyn: Vita Chart (Bronx, New York, Vita Chart, Inc., 1987).

Appendix A

Airway Obstruction

Would you be ready in an emergency if you or someone you knew were choking on food? The following should be studied. It is very simple and may save a life!

If you find yourself choking, simply lean over and forcefully push upward and inward with one hand over your fist while coughing (See figure 1.), or lean forcefully over a chair while coughing. (See figure 2.) This should loosen the object. Quickly repeat as necessary.



Figure 1

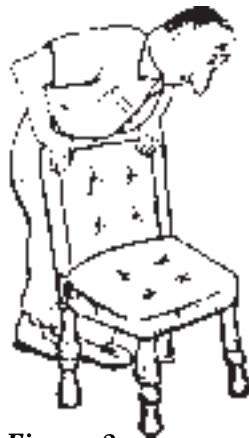


Figure 2

If you realize someone else is choking, first ask, “Can you speak?” If they cannot, proceed with the following telling them what you are doing.

- Deliver 4 sharp back blows with the heel of your hand. (See figure 3.)
- Check the choking person quickly; and, if they still cannot speak, deliver 4 abdominal thrusts. Stand behind the person and wrap your arms around their waist. Grasp one fist with your other hand and place thumb side of your fist in the midline between the waist and rib cage. Press fist into abdomen with quick inward and upward thrusts. (See figure 4.)
- Repeat back blows and manual thrust if necessary.



Figure 3



Figure 4

After reading or perhaps even practicing the above, you realize how important a seemingly simple maneuver can be. However, this technique may not always be effective. Unfortunately, it is beyond the scope of this book to teach CPR (Cardiopulmonary Resuscitation). It is strongly recommended that you contact your local American Heart Association. Everyone can and should learn CPR.

Appendix B

Lung Line

Good News!!

After reading this manual, all your questions may not have been answered.

What to do??? Call the LUNG LINE. At the heart of this service is a toll-free number — 800-222-LUNG — which puts you through to National Jewish Hospital and Asthma Center.

LUNG LINE hours are 8:30 a.m. to 5 p.m., (Mountain Time) Mondays through Fridays. Callers during off hours or weekends are asked to leave their questions, name and telephone number and are contacted as soon as possible.

Appendix C

Panic Control

Many people with COPD fear exercise. They know it leads to shortness of breath, often extreme. Shortness of breath during exercise is often caused by improper breathing. . . gasping for air, upper chest breathing and improper exhalation. It does not take too many of these improper breaths to cause trapped air in the lungs.

Learn to recognize trapped air during exercise or any time, even during the middle of the night. The feeling is extreme tightness in the chest and the inability to breathe in deeply. Respirations can be in excess of 30 per minute. (See page 42 to help you identify when you have trapped air in the lungs.)

Panic Control will help to control your breathing. Panic Control consists of two techniques. The first, Part I, is often all a person may need. It requires the use of a cloth press. (An arm press technique may be used if you do not have the proper cloth.) The second, Part II, is either a prerecorded cassette to help you gain control or a written script which a friend or spouse can use to help talk you through the difficulty.

Panic Control, Part I

Cloth Press Method

You will need a cloth band. The band should be 4" to 5" wide and 5' to 6' long with a minimum of give. An old sheet or towel may be torn or cut to the proper length.

1. Sit.*
2. Wrap the cloth band around the lower ribs and upper abdomen. Cross the ends (Do not tie.) and hold each end in

one hand. Note: Hold hands closely to where the wrap is crisscrossed. This position is less tiring.



Figure 1



Figure 2

3. Allow the band to be loose as you inhale. Try inhaling through the nose; however, inhalation through the mouth is usually necessary until breathing is under control. (Figure 1)
4. Pull the band snugly applying pressure as you exhale through pursed-lips. Relax. (Figure 2)
5. Continue using the cloth press until your breathing rate is normal and the feeling of pressure has left the chest. This may be accomplished in as little as three or four exhalations; or, it may require many breaths until you have gained control.

Arm Press Method

1. Sit.*
2. Place folded arms across across rib cage.
3. Inhale through the nose. If you cannot do this, inhale through the mouth until breathing is under control.
4. Apply firm inward pressure with forearms while exhaling through pursed-lips.



5. Continue until your breathing rate is more normal and the feeling of pressure has left the chest. This may be accomplished in as little as three or four exhalations; or, it may require many breaths until you are in control.

* These techniques, Cloth Press or Arm Press Methods, may be used while standing if there is no place for you to sit.

Caution: When practicing Panic Control, Part I, you probably do not have trapped air in the lungs; therefore, take care not to force too much air out.

Panic Control, Part II

Panic Control, Part II should be practiced with your spouse or friend, or, if you are alone, you may wish to record your own voice or to purchase a prerecorded cassette for Panic Control. Knowing where you can turn for help is a great relief.

If another person is going to help you, he or she should be able to talk to you in a relaxed manner and guide you effectively. This takes a little time and practice; but, if you need this technique at 2 a.m., you will be glad you practiced it now and know it very well. The following is a short sample of what your helper will say:

- Blow out through pursed-lips.
- Raise your shoulders. Try to touch your ears with your shoulders.
- Drop your shoulders.
- Try to breathe in through your nose.
- Exhale through pursed-lips.
- Inhale through your nose. One, two. . .
- Exhale more slowly through pursed-lips.
- In one, two. . .
- Out one, two, three. . .
- In slowly one, two. . .

- Out one, two, three. . .
- In and out, slow and easy.
- You know you can breathe correctly. You can do what you need to do. Take your time and remember, you can do it. When in doubt, blow out.
You are doing fine.
- In one, two. . .
- Out one, two, three. . .
- In one, two. . .
- Out one, two, three. . .

Continue this easy speech in a very slow, rhythmic manner, almost in a monotone, until the person is breathing more easily.

Note: Initially, it may be difficult to breathe in through your nose. If this is the case, breathe in through your mouth trying not to “gulp” air. Breathe in through your nose as soon as you begin gaining control and always exhale through pursed-lips.

Note: Practice Panic Control, Part I and Part II regularly, before you need it. When shortness of breath occurs suddenly, it is often difficult to remember what to do.

Appendix D

Target Heart Rate

Before you begin your exercise program, check with your physician. He may first prescribe special exercise testing to determine how safe it is for you to exercise. Then he may prescribe your target heart rate.

The target heart rate for many people is found in the following manner:

Subtract your age from 220. This is your maximal heart rate. Multiply your maximal heart rate by 60%, 70% then by 80%. These numbers will give you your target heart rate range. Note: Your physician may wish to begin your program using 60% of your maximal heart rate, allowing the heart to gradually increase in strength.

Example:

Sam is 60 years old. (Subtract 60 from 220. This equals 160.) 160 is his maximal heart rate.

Sam's target heart rate ranges are:

$$160 \times .60 (60\%) = 96$$

$$160 \times .70 (70\%) = 112$$

$$160 \times .80 (80\%) = 128$$

Sam's physician has instructed him to exercise at 60% of his maximal heart rate (96 beats per minute) for the first two weeks of exercise. After this initial warm-up, Sam is to exercise at his target heart range of 112 to 128 beats per minute, or roughly 110 to 130 beats per minute.

Karvonen's Formula for predicting target heart rate is another very popular method. Your physician may choose

this method since it takes into account the resting heart rate; however, neither method is practical if the resting heart rate is too high. Resting heart rates may be above normal because of body condition, medications or illness.

INDEX

A

- Abdominal muscle exercises, 81-82
- Accessory muscles, 5, 77
- Aerosol treatments, instructions of, 49-51
- Albuterol, 18
- Alcohol, 19, 25, 115
- Allergies, 7, 8, 21, 130
- Alveoli, 3, 4, 5, 6
- Antibiotics, 8, 10, 11, 19-20
 - cephalosporin, 20
 - Doxycycline, 20
 - erythromycin, 19, 20
 - oxyquinolone, 20
 - penicillin, 19, 20
 - sulfa drugs, 19, 20
 - tetracycline, 19, 20, 144
- Anger, 109, 110
- Anxiety, 9, 25, 27, 107, 145
- Arterial blood gas, 27, 31
- Asthma, 5, 8-10, 32, 34, 76
- Asthmatic bronchitis, 8

B

- Bathing, 94, 114
- Beclomethasone, 23
- Blood gas study, 27, 31
- Breathing,
 - through the nose, 36, 37
 - through the mouth, 37, 75
 - during exercises, 75-76
- Brethine, 18
- Bronchi, 2, 7, 8
- Bronchial drainage, 8, 11, 51, 52, 60-62
- Bronchial spasms, 8, 19, 23, 42, 46

- Bronchiectasis, 5, 10-11
- Bronchioles, 3, 8
- Bronchitis, chronic, 5, 7-8, 116
- Bronchodilators, 8, 18-19, 22, 23, 24
 - Alupent, 18
 - Atrovent, 19
 - Brethine, 18
 - Bronkosol, 18
 - Metaprel, 18, 19, 26
 - Proventil, 18
 - Terbutaline, 18
 - Tornalate, 18
 - Ventolin, 18
 - theophylline, 18
- Broncho-inhaler, 46-49
 - metered dose, 46-49
 - hand held, 46-49
 - overuse, 137
 - tube spacer, 48, 49, 137
- Bronchoscopy, 143

C

- Calcium, 23
- Capillaries, 3, 9, 22
- Carbon dioxide, 1, 3, 6, 27, 39
- Cataracts, 23
- Chronic bronchitis, 5, 7-8, 116
- Chest physiotherapy, 60-65
 - bronchial drainage, 60-62
 - clapping, 60, 63
 - controlled coughing, 60, 63-65
 - diaphragmatic breathing, 60, 63
- Choaking,
 - airway obstruction, 151-52
 - mucus, 64
- Cigarettes, 19, 113

Cilia, 1, 2, 10
Clapping, 60, 63
Cleaning of respiratory equipment, 55-58
Codeine, 21
Coffee, 19
Conductive system, 1, 3
COPD, definition, 146
Corticosteroids, 22
Coughing techniques, 64-65
Cromolyn sodium, 24, 26

D

Daily schedule (Sample), 103
Decongestants, 22
Depression, 107, 111, 112, 115
Diaphragm, 4, 5, 35, 36, 40, 63
Diaphragmatic breathing, 1, 9, 35-42, 63, 69, 72, 92, 138
Diet, 120
Digitalis, 25
Diuretic, 24, 124
Doctor, ask the, 136-145
 when to call, 140

E

Eating, problems in, 99
Edema, 24, 138, 139
Emphysema, 5-7, 76, 116, 142, 143
Equipment, cleaning of, 55-58
Exercise,
 accessory muscles, 5
 abdominal muscles, 81-82
 biking, 87
 breathing, 75-76
 fear, 154
 general procedure, 73-75
 inspiratory resistive breathing, 42-45
 lack of, 145

mobility of rib cage, 79-81
shoulder and neck muscle relaxation, 77-79
walking 84-87
when to exercise, 9, 71, 101

Expectorants

glycerol guicolate, 21
potassium iodine, 21
water, 21

F

Fatigue, 93, 130, 134, 144-45
Fever, 22, 26
Flu vaccine, 26, 117

G

Glaucoma, 22
Glyceryl guicolate, 21

H

Handicapped parking, 144
Heart palpitation, 19, 72
Heart rate, 19, 71, 72, 73, 87, 115, 158
Hemoptysis, 10, 11
Humidifier, 29, 55, 58, 142
Humidity, 8, 29, 106, 115, 137
Hyperventilating, 77, 137

I

Infection, 7, 8, 10, 11, 19, 20, 22, 26, 60, 76, 94, 117, 131,
137, 138, 140
Intal, 24, 26
Inspiratory muscle training, 42-45
Intermittent Positive Pressure Breathing (IPPB), 53-55
Iron, 128, 134

L

Life and death, 112, 145

M

Medications, 12-34

- antibiotics, 19-20
- antihistamines, 21
- beclomethasone, 23
- brand name, 12, 13
- bronchodilators, 18-19
- children, 32-34
- codeine, 21
- cromolyn sodium, 24, 26
- decongestants, 21
- digitalis, 18
- diuretics, 24, 139
- expectorants, 21
- flu and pneumonia vaccines, 26
- generic name, 12, 13
- how to take, 14, 17
- new drugs, 26
- oxygen 27-32
- potassium supplements, 21
- premeasured, 19
- record of, 14-16
- steroids, 22, 63
- tranquilizers and sedatives, 25

Mental relaxation, 69

Metered-dose inhaler, 18, 19, 32, 33, 46-49, 76, 115
frequency, 137

Milk, 20, 95, 122, 126, 127, 144

Minerals, 132-135

Mouth breathing, 37-38, 75

Mucous membrane, 1, 127

Mucus, getting it up, 64-65

N

Nasal cannula, 30, 32, 137, 140

Nebulizers, 55

Neck and shoulder muscles, 77-80

Nervousness, 25

Normal saline, 19, 49, 51, 58-59

Nutrition, 120-135

O

Osteoporosis, 23, 63, 76, 132

Oxygen, 27-32

concentrator, 28

conservation, 30

cylinders, 28-29

liquid, 29-30

purpose, 27

safety of, 27, 31

sensitivity to, 27

showering or bathing with, 95

therapy, 27, 140

transtracheal, 30

travel, 116, 117, 118

P

Panic control, 9, 119, 154-57

Peak flow meter, 9, 147

Penicillin, 19, 20

Percussion, 63

Physical conditioning, 71-90

goal-setting, 71, 86

warm-up, 73-75

Pneumonia vaccines, 26

Pollution, 7, 8, 104-107, 118

Postural drainage; see bronchial drainage

Potassium,

depletion, 24, 133

supplements, 24, 134

Potassium iodine, 21

Prednisone, 22

Proventil, 18

Pulmonary functions, 142-43

Pulse, taking of, 71

Pursed-lip breathing, 7, 9, 35-42, 45, 72, 89, 92, 113

R

Relaxation 66-70

- exercises for shoulder and neck muscles, 77-79
- deep breath, 69
- mental imaging, 69
- progressive, 66-68

Respiration, 1, 3

Respiratory equipment, 46-59

Respiratory system, 2, 3, 5, 20

Rib cage mobility, 79-81

S

Salt diet, sodium, 24, 125, 133, 138, 139

Sedatives, 25

Sex, 114-15

Shortness of breath,

- anxiety, 110
- bowel movement, 95
- exercising, 72, 85, 120, 136, 145
- showering, 95, 114

Sinus condition, 37, 127

Sleeping, difficulty of, 138-39

Sleeplessness, 25, 66, 107

Smoking, 7, 8, 19, 31, 107, 113, 143

Sputum culture, 20

Stairs,

- ascending, 88
- descending, 88

Steroids, 22, 23, 24, 63

Azmacort, 23

Beclovent, 23

Vanceril, 23

Stress, 25, 66, 76, 126, 127, 130, 131

Sulfa drugs, 19, 20

Swelling, ankles and legs, 25, 124

T

Temperature, 115

Tetracycline, 19, 20, 144

Theophylline, 18, 141

Thoracic cage, 4

Tranquilizers, 25

Trapped air, 6, 9, 35, 42, 45, 77, 81, 85, 154
 exercise for removal of, 42, 81

Travel

 medications, 117, 141

 oxygen, 116, 117, 118

U

Ultrasonic nebulization, 51, 52

V

Vanceril, 23

Vaporizer, 58

Ventolin, 18

Vitamins, 127-32

W

Walking, 72, 84-87

Water, 21, 123-125, 133, 138

Water retention, 124, 133, 137

Weak, 27, 76, 120, 130

Weight, 142

Wheezing, 18, 72, 76

X

X-ray, 142

