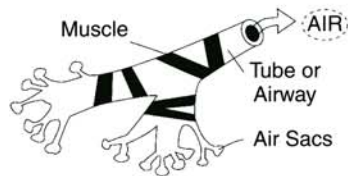


## I. WHAT IS ASTHMA?

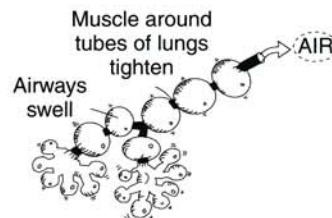
Asthma is a chronic lung disease. Symptoms may be mild and rare or frequent and life-threatening. When an asthmatic person is exposed to certain stimuli or triggers, these triggers will cause the muscles around the air passages to tighten. The lining of the airways becomes inflamed and swollen, often leading to excessive production of mucus. The excessive mucus further clogs the already narrowed airways. Air then has a hard time moving through the airways and in and out of the air sacs (alveoli), thus making breathing more difficult.

Major warning signs of an asthma attack:

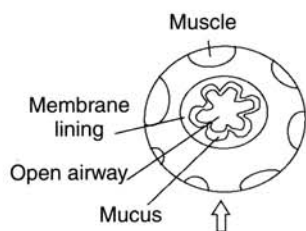
- Wheezing or whistling sound
- Shortness of breath
- Chest tightness
- Persistent cough
- Excessive mucus production



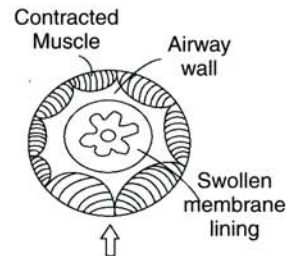
Normal airway



Asthma episode airway



Enlarged cross section of a bronchial tube in normal breathing



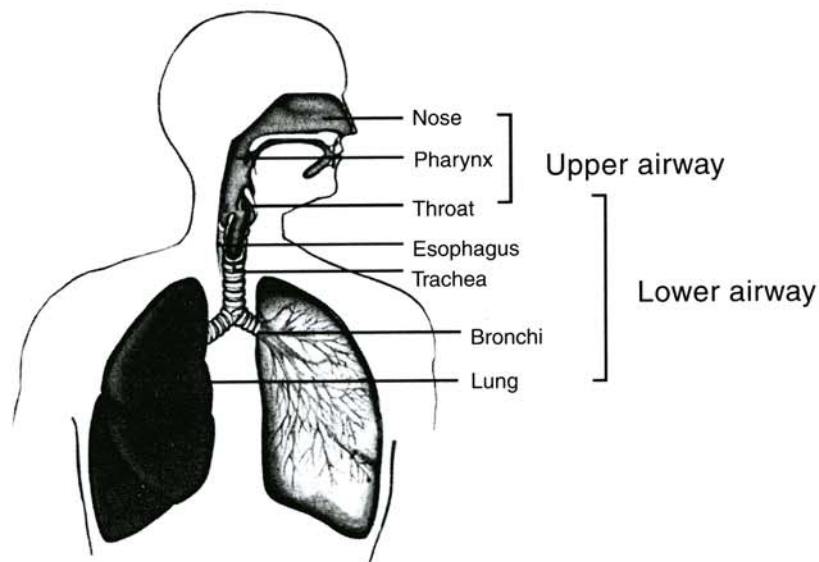
Enlarged cross section of a bronchial tube in an asthma episode

## II. HOW DO YOUR LUNGS WORK

The lungs are the main organs for breathing. Each time you breathe, air enters through your nose and mouth and passes through your windpipe, known as the trachea. It then passes into the lungs. The lungs have branching airways called bronchial tubes. The bronchial tubes are wrapped by bands of muscle.

The lining of the airway produces mucus, a sticky substance which helps you get rid of dust, particles or germs that you breathe in which may irritate your lungs. The air then travels deeper into the lungs through smaller bronchi called bronchioles. The bronchioles end in balloon like sacs called alveoli.

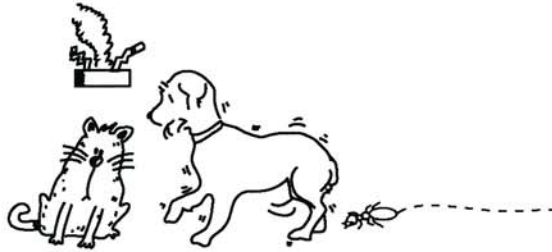
1 These air sacs take oxygen from the air you breathe in and pass it into the bloodstream. They also collect carbon dioxide, a waste product from the bloodstream, which you breathe out. This exchange of oxygen and carbon dioxide is very important because every cell in the body needs oxygen to function. It takes a constant supply of oxygen for the cells of your body to live.



### III. WHAT TRIGGERS AN ASTHMA ATTACK?

Not everyone responds to the same triggers. Allergy test and your experiences can help you identify what triggers your asthma attack. The most common asthma triggers are:

- Dusts
- Dust mites
- Cockroaches
- Mold spores (mildews)
- Pollen from flowers, trees or grass
- Air pollution
- Tobacco smoke
- Car exhaust
- Foods: fish, eggs, nuts, peanut butter, milk products, chocolate, citrus fruits (orange, grapefruit, tangerine)
- Sulfite: a preservative added to some wine, beer, dried fruits and restaurant prepared fruits and vegetables.
- Household pets: dogs, cats, birds, rabbits, hamsters.
- Household products - feathered pillows, down comforters, sprays, perfumes, scented cosmetics, vapors from cleaning solvents, paint, bleach.
- Certain vigorous exercises
- Emotional stress and excitement
- Weather changes, especially cold.
- Certain medications such as aspirin
- Nighttime asthma



## IV. HOW TO CONTROL ASTHMA TRIGGERS?

- Use damp cloth to dust your home frequently.
- Wet mop floors instead of sweeping.
- Change furnace filters frequently.
- Avoid dust collecting items such as draperies, cloth upholstered furniture, artificial plants, stuffed animal toys.
- Vacuum often (an asthmatic person should be out of the room while vacuuming is being done).
- Reduce molds by removing household plants and scrubbing showers and bath tubs regularly.
- Stay indoors during midday and after noon when pollen count is high or on days with high pollution levels (check the newspaper weather reports).
- Quit smoking and avoid second-hand smoke.
- Avoid foods that trigger your asthma.
- Avoid using household products that trigger your asthma.
- Prevent exercise-induced asthma attack by following your doctor's instruction in taking medication before exercise (Swimming is an excellent exercise for most people with asthma).
- Avoid close contact with people who have colds and flu and ask your doctor for flu and pneumonia vaccinations.
- Prevent nighttime asthma by following your doctor's instruction in taking medication before bedtime.
- Reduce house dust mites which often live in mattresses, bedding, curtains, carpets and house dust by washing bedding in hot water (130°F) weekly, covering mattresses and pillows with special dust mite-proof cases, and replacing wall-to-wall carpets with linoleum, tile or hardwood floors.



## V. YOUR PEAK FLOW METER

A peak flow meter is a portable, hand-held device used to measure your ability to blow air out of your lungs. There are many kinds of peak flow meters. When this meter is used on a regular basis, it can help you and your doctor:

- Predict an asthma attack before it occurs
- Monitor your asthma
- Prescribe medicines to keep your asthma under control
- Determine if you need to change the way you are using your medicine
- Identify your asthma triggers



### A. How to use a peak flow meter

1. Slide the little marker down as far as it will go. This sets the meter to zero.
2. Stand up. Take a big breath with your mouth open. Hold the meter in one hand. Keep your fingers away from the numbers.
3. Quickly close your lips firmly around the tube. Do not put your tongue in the hole. Blow one time as fast and hard as you can.
4. The marker will go up and stay up. Do not touch the marker. Find the number where the marker stopped.
5. Blow 2 more times. Push the button down each time. Record the highest number.

### B. Know your peak flow rate (PFR)

It is recommended that you record your peak flow rate (PFR) twice a day for a two to three week period. Usually the best time to do this is when your asthma is not giving you any problems. You can then calculate your personal best peak flow. Percentages of this PFR can then be used to calculate several zones and be used in the development of an action plan.

### C. How to interpret peak flow rates (PFR)

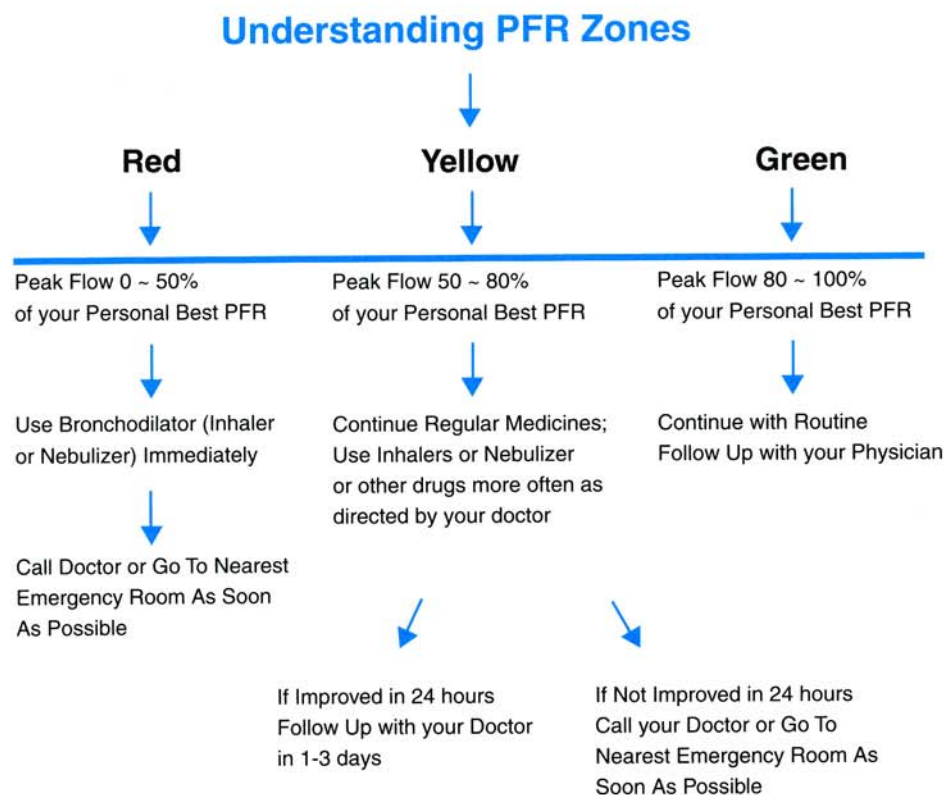
Three zones of measurement are commonly used to interpret PFR. It is easy to relate the three zones to the traffic light colors: green, yellow, red.

**Green Zone:** 80% ~ 100% of your personal best PFR signals all clear. A reading in this zone means that your asthma is under reasonably good control. It would be advisable to continue your prescribed program of management.

**Yellow Zone:** 50% ~ 80% of your personal best PFR signals caution. It is a time for decisions. Your airways are narrowing and may require extra treatment. Your symptoms can get better or worse depending on what you do, or how and when you use your prescribed medication. To be safe, call your doctor.

**Red Zone:** Less than 50% of your personal best PFR signals a Medical Alert. Immediate decisions and actions need to be taken. Severe airway narrowing may be occurring. Contact your doctor now. The doctor can tell you what treatment to start.

Some doctors may suggest zones with a smaller range such as 90-100%, especially if your asthma changes quickly. Always follow your doctor's suggestions about your Peak Flow Rate. The following flow chart can help you decide what actions to take:



## VI. MEDICATIONS

There are two major categories of asthmatic medications that may help you breathe better: Bronchodilators and Steroids. Your doctor will decide which medications to use, when and how to use them.

### BRONCHODILATORS

*What they do:* Open your airways and allow you to breathe better. Some are for fast relief, others are for long-term control.

*Available forms:* pills, liquids, inhalers, injections.



*Examples of commonly prescribed medicines:* Albuterol, Serevent, Alupent, Combivent, Proventil, Brethine, Ventolin, Volmax, Atrovent, Maxair, Foradil.

*Possible side effects:* Increased heart rate, nervousness, shakiness, headaches, nausea or upset stomach, loss of appetite, dizziness.

*Things to remember:* Know the names of your medications, keep a list.

1) Take the medications exactly as directed. 2) Do not increase the amount without checking with your doctor.

### STEROIDS (Anti-inflammatories)

*What they do:* Reduces swelling and inflammation in the airways. Helps decrease mucous and wheezing and eases breathing for long term control.

*Available forms:* Pills, inhalers, injections.

*Examples of commonly prescribed medicines:* Vanceril, Beclovent, Azmacort, QVAR, Aerobid, Aerobid-M, Flovent, Pulmicort.

*Possible side effects:* Mouth sores, sore throat, fatigue, nausea, vomiting, weight loss, decrease appetite, weakness, dizziness.

*Things to remember:* Know the names of your medications, keep a list.

1) Do not stop taking or change the amount on your own. 2) After using inhalers, rinse mouth with water to avoid irritation or infections. 3) Consult your doctor if any side effects occurs

## THEOPHYLLINES

*What they do:* For long-term control

*Available forms:* Pills, injections.

*Examples of commonly prescribed medicines:* Theodur, Unidur, Uniphyll, Theochron, Theo-24, Slobid

*Possible side effects:* Nausea, vomiting, tremors, heart palpitation

## NONSTEROIDAL ANTI-INFLAMMATORIES

*What they do:* For long-term control. Generally not as reliable as steroids.

*Available forms:* Inhalers

*Examples of commonly prescribed medicines:* Tilade, Intal

*Possible side effects:* Bad taste, cough, throat irritation, wheezing, stomach upset.

## LEUKOTRIENE ANTAGONISTS

*What they do:* Reduce swelling, inflammation, and mucus in airways. For long-term control.

*Available forms:* Pills

*Examples of commonly prescribed medicines:* Accolate, Singulair

*Possible side effects:* Headache, fatigue, GI upset



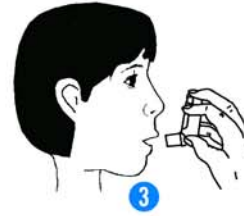
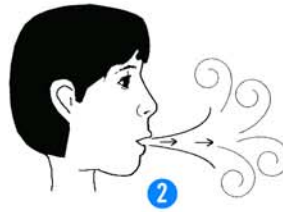
## VII. USING YOUR BREATHING AIDS

### A. Metered-Dose Inhaler

An inhaler is a sprayer made to deliver a dose of medicine that you can breathe deeply into your lungs. In a metered-dose inhaler, the medicine comes packaged in a spray container. Using an inhaler seems simple, but most patients do not use it the right way. When you use your inhaler the wrong way, less medicine gets to your lungs. To properly use a metered-dose inhaler, follow these steps:



5



1. Remove the cap from the mouthpiece. Shake the entire unit.
2. Breathe out completely.
3. Hold the inhaler properly by placing your index finger on the top of the metal canister and your thumb on the bottom of the plastic mouth-piece. Place the inhaler one or two inches away from your mouth.



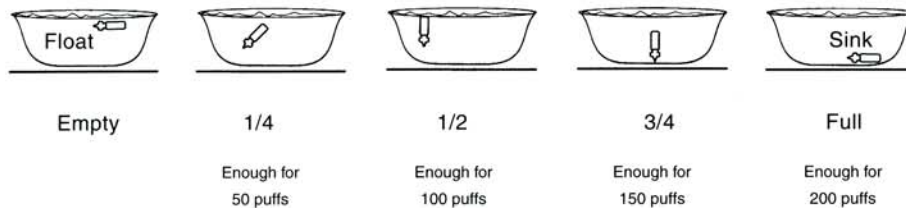
4. Press the top of the canister down firmly. At the same time, inhale deeply and slowly through your mouth.
5. Continue to inhale deeply. Hold your breath for 5 to 10 seconds.
6. Release the canister and remove the canister from your mouth. Breathe out slowly.

7. If your doctor has ordered more than one puff, wait at least 1 minute before the next puff. This allows the first puff to open your airway, enabling the second puff to penetrate more deeply.
8. Repeat above steps for each puff.
9. Do not increase the number or frequency of puffs without asking your physician.

### Care of your inhaler

1. Wash your inhaler thoroughly at least once a day. The mouth piece may get blocked unless cleaned daily.
2. Remove the metal canister and rinse the mouthpiece and cap in warm water.
3. Dry thoroughly.
4. Do not puncture your inhaler or discard it in a fire because its contents are under pressure. Do not store or use near heat or open flame.

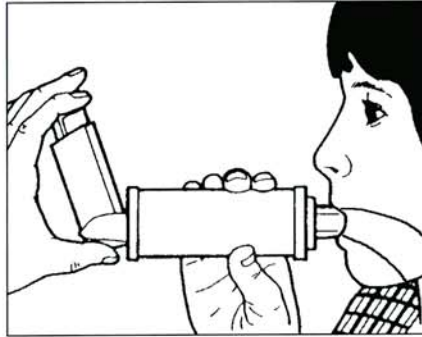
This chart shows an easy method for estimating the contents of your inhaler. Simply place your canister in a bowl of water and compare its position with the chart:



When your inhaler has 1/4 left, it is time to re-order.

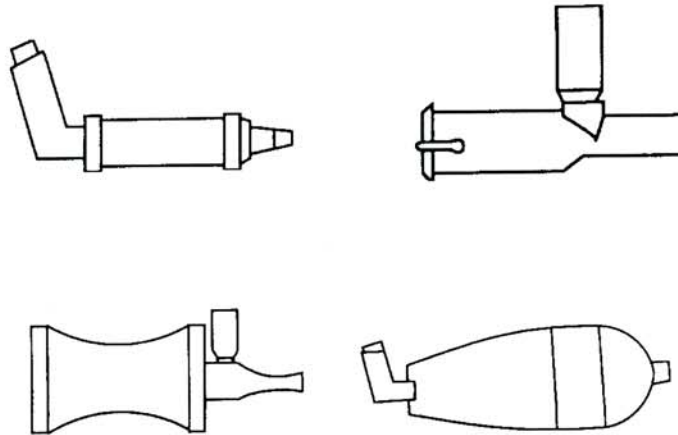
### B. Spacer

Spacer devices or “spacers” help deposit more medications into your lungs and decrease the amount of medications left on the back of your



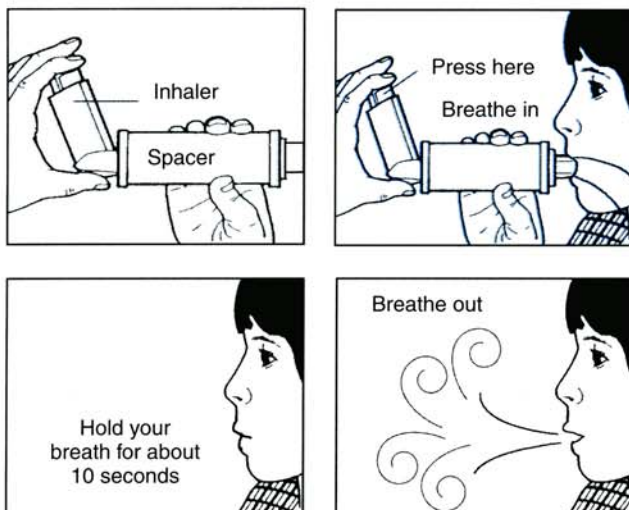
throat by as much as 80%. Inhaled corticosteroids should always be used with spacers to greatly reduce any yeast infection (thrush) in the mouth and throat. Always rinse your mouth with water after using corticosteroids. This will help reduce the chances of thrush.

The graphic below shows different kinds of spacers you can buy in stores:



To properly use a spacer, follow these steps:

1. Put the spacer on the inhaler. Shake well.
2. Breathe out normally.
3. Press down 1 time on the inhaler. This gives you 1 puff of medicine. Breathe in as SLOWLY and DEEPLY as possible through your mouth. Hold your breath while you count slowly to 10 in your head.
4. Take the mouthpiece out of your mouth.
5. If your health care provider has prescribed two puffs, wait 1-2 minutes then repeat steps 2 through 4.



### Care of Your Spacer

1. Gently wash both the inside and outside of the spacer with warm (not hot) soapy water and rinse thoroughly once a week. If your spacer has a separate bag attachment, cleaning the bag is not recommended. Instead, replace the bag every few weeks or immediately if the bag is torn. Replacing the bag will require a doctor's prescription. The mouthpiece may be cleaned using these instructions.
2. After washing and rinsing, soak the spacer in a solution of 1 part vinegar to 3 parts water, followed by a very thorough rinse. This will kill germs in and on the spacer.
3. After cleaning, air dry completely before using or storing. Do not place in dishwasher, near a stove or other source of heat.

## VIII. EXERCISE

An appropriate exercise program is of utmost importance for persons with asthma. However, persons with asthma may experience shortness of breath upon overexertion or when exercising without proper precautionary measures. During an asthma episode resulting from exercise, the primary response in the lungs is the tightening of the muscles around the bronchioles.

It has been reported that up to 90% of all persons with asthma can experience exercise-induced bronchospasm. However, by exercising properly, persons with asthma can improve their physical working capacity, strengthen their respiratory muscles, decrease body fat, and decrease the frequency and relative intensity of asthmatic episodes.

### General Guidelines to Prevent or Control Exercise-Induced Asthma:

1. Before starting an exercise program, discuss your plans with your physician and develop a pre-exercise medication plan.
2. Adjust your activities, even consider not exercising, when you have a viral or bacterial infection, when air pollution or pollen levels are high, when temperatures are cold, or when the weather is hot with low humidity levels. Talk to your doctor.
3. Select an exercise that does not require continuous, strenuous exercise (e.g. walking, golf). Avoid continuous running, strenuous biking, and high impact aerobics.



Rapid mouth-breathing brings dry air into the lower airways that could trigger asthma. EXCEPTIONS: continuous exercise in water often eliminates this problems, making

swimming a good exercise for adult with exercise-induced asthma.

4. Prepare for exercise by warming-up at least 5 minutes and doing light exercise first before going on harder ones. Warm up exercises have been helpful in reducing flare-ups during exercise.
5. Drink a glass of water before exercise and use your medicines as prescribed. Make sure you have your fast acting medication to help with problems, should they occur.

## IX. SUMMARY

### Management of Asthma

1. Identify and control asthma triggers.
2. Use asthma medications properly. Asthma medications may be taken by mouth, injections or inhalation. They help to relax and open airways and reduce inflammation. Always take your medications at scheduled times to reduce asthma attacks . If you are using an inhaler, learn to use it correctly and care for it properly. Keep your inhaler with you at all times and test the quantity of medication in it regularly.
3. Monitor your asthma by using the peak flow meter regularly. Keeping a daily record of your measurement can help you and your doctor better manage your asthma. A low peak flow value indicates that you should take steps to prevent an asthma attack.
4. When you exercise, be sure to follow the general exercise guidelines to prevent or control exercise-induced asthma.



# Acknowledgement

**Project Director:** Angela Sun, MPH

**Editor In-Chief:** Fred Blake Hom, M.D. Pulmonary Specialist

**Chinese Translation:** Cecilia Pang

Special thanks to Yvonne Liang, MS, RD and  
Wan Ngar Kwok for their contribution in  
technical review and editing.

**Funded by:**

Chinese Community Health Care Association, Grants Program  
&  
Chinese Community Health Resource Center, Chinese Hospital

**Members of the Chinese Community Respiratory Disease Task Force of the American Lung Association of San Francisco and San Mateo Counties:**

Kenneth Chan, M.D., Pulmonary Specialist, Task Force Co-Chair  
Fred Blake Hom, M.D., Pulmonary Specialist, Task Force Co-Chair  
Elena Wong, Respiratory Therapist  
Angela Sun, MPH  
Louis G. Allsopp  
Eugene Y. Choi, M.D., Allergy Specialist  
Schuman Tam, M.D., Allergy Specialist  
American Lung Association of San Francisco and San Mateo Counties