Living with Asthma
Seattle Children’s has made a video to accompany this handbook.

Watch **Living with Asthma**

at seattlechildrens.org on the Pulmonary and Sleep Medicine Resources page, and on YouTube.
## ASTHMA MANAGEMENT PLAN

Bring this Management Plan with you to ALL doctor and Emergency Room visits along with peak flow, spacer and medicines.

### Date of Management Plan:

Ordered by:

<table>
<thead>
<tr>
<th>Best Peak Flow is:</th>
<th>Your follow up appointment with:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Phone: Date:</td>
</tr>
</tbody>
</table>

Avoid these Triggers: Cigarette smoke, Colds, Strong odors, Air pollution/Smog and Smoke.

Your known Triggers:

### Classification of Severity:

<table>
<thead>
<tr>
<th>Peak Flow is: above (Above 80% of Best Peak Flow)</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Breathing is good</td>
</tr>
<tr>
<td>- No cough or wheeze</td>
</tr>
<tr>
<td>- Can run and play</td>
</tr>
<tr>
<td>- Sleeps through the night</td>
</tr>
</tbody>
</table>

I feel good. I take these asthma controller medicines every day.

<table>
<thead>
<tr>
<th>Medicine</th>
<th>How much</th>
<th>How often</th>
</tr>
</thead>
</table>

If you have symptoms during exercise, take 2-4 puffs of albuterol through a metered dose inhaler with spacer 15-30 minutes before activity.

### Peak Flow is: to (50 to 80% of Best Peak Flow)

- Cough
- Wheeze
- Tight chest
- First signs of a cold
- Waking up at night due to coughing

I do not feel good. I need to take rescue medicines and my controller medicines listed above to keep from getting worse.

<table>
<thead>
<tr>
<th>Medicine</th>
<th>How much</th>
<th>How often</th>
</tr>
</thead>
</table>

Call your provider if you have these symptoms frequently or if relief medicine does not work!

### Peak Flow is: below (Below 50% of Best Peak Flow)

- Medicine is not helping
- Breathing is fast and hard
- Can't walk
- Can't talk well

I need help now! I need to take these medicines and call my provider.

<table>
<thead>
<tr>
<th>Medicine</th>
<th>How much</th>
<th>How often</th>
</tr>
</thead>
</table>

If my breathing gets worse I will call 911 or go to the emergency department.

### FOLLOWUP CARE INSTRUCTIONS

Contact your child’s regular health care provider with further asthma questions. Your child’s breathing needs to be checked and the asthma management plan reviewed within 48 hours of discharge from the hospital.

I understand the information provided and have received a copy of this Asthma Management Plan.

Signature (Signed copy must stay in medical record)  Relationship to the Patient  Date  Time

Legal guardian/parent refuses Asthma Management Plan

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Living with Asthma — Seattle Children’s Hospital
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The asthma response

Asthma is a very common chronic condition of the lungs and airways. It affects one out of 10 children in Washington state. For most children, asthma symptoms (the coughing, wheezing and tight chest) come and go. But that doesn’t mean their asthma goes away.

The lungs of a child with chronic asthma are always twitchy or hypersensitive. By the time your child is coughing and wheezing, the symptoms are just the “tip of the iceberg.” Hidden problems like clogged air tubes and airway swelling were going on well before any symptoms showed up. An asthma emergency or asthma attack happens when early signs are missed or ignored and can cause your child to wind up in the ER or hospital.

What really goes on inside the lungs of a child with asthma?

Actually, three different events or responses occur in the lungs of a child with asthma. These three events result in coughing, wheezing and a tight chest. Some children feel out of breath.

1. **Airways swell or inflame on the inside.** This inflammation is always present in the lungs of a child with asthma. It causes the airways to be sensitive or “twitchy” and overreact to triggers.

2. **Muscles tighten around the breathing tubes.** These are smooth muscles, and your child has no control over tightening or flexing these muscles. This squeezing is called bronchoconstriction or bronchospasm. It’s hard to move air in and out through a tiny tubes when you are trying to breathe.

3. **Extra mucus (mew-cus) is made inside the lung tubes.** This can cause your child to cough.

In asthma, the air tubes in the lungs:
- Swell up on the inside
- Squeeze closed (constrict)
- Make extra mucus
Getting asthma diagnosed*

What about wheezing in a baby?

It's important to remember that just one instance of wheezing isn't enough to diagnose asthma. It must happen more than once. But even when wheezing happens on a recurring basis, a healthcare provider may still not be certain the cause is asthma, especially in young children. More time, and sometimes more tests, may be needed to confirm the diagnosis. Fewer than one-third of all infants who wheeze on a recurring basis during their first 3 years continue to wheeze into later childhood. In other words, most kids who wheeze as infants outgrow it and don’t have asthma when they get older.

How is asthma diagnosed in kids?

Asthma is often hard to diagnose in very young children. Getting the diagnosis of asthma is based on:
• Your child’s medical history
• Daytime and nighttime symptoms
• A physical exam

Because there are many reasons why a child may cough and wheeze, other tests may be done. When your child is school-aged, breathing tests called pulmonary function tests are often done. These include spirometry and exhaled nitric oxide. Often chest X-rays and allergy tests are helpful.

The severity of your child’s asthma is determined by how often they are having asthma symptoms. Simply put, the more often your child is coughing, wheezing or short of breath, the more severe the asthma. Many children and teens are not bothered by asthma symptoms on a daily basis, but some are.

Based on how often your child is having asthma symptoms, your healthcare provider can:
• Decide which medicines to use
• Judge how often your child needs to take them
• Create an individualized Asthma Management Plan

Once your child is on asthma medicines, you can begin to watch if the medicines are helping. Changes in medicines are based on how well your child is doing over several months’ time.

*This information is based on the 2007 National Heart, Lung, and Blood Institute Asthma Guidelines
Getting asthma under control – Watch it for 4 weeks

Whether you are trying to get your child's asthma diagnosis confirmed for the first time or checking to see if a medicine plan is working, it is helpful to track your child's symptoms over 4 weeks.

Think about daytime and nighttime symptoms separately. Write down what you see and hear in a log or notepad.

Take the Asthma Control Test (ACT) at www.asthmacontrol.com in English or español. It will give you a score to take to your child's healthcare provider.

Is your child’s asthma under control? Check ✓

Your child's asthma is under good control if he or she:

☐ Can sleep and awaken without asthma symptoms
☐ Can perform normal daily activities without difficulty
☐ Misses no school or daycare because of asthma
☐ Has few urgent visits to your healthcare provider, never needs to go to an emergency room or be admitted into the hospital for asthma
☐ Has few medicine side effects
☐ Has close-to-normal or normal lung function test results

Take the Asthma Control Test at www.asthmacontrol.com.

With treatment, most children with asthma can run and play hard, take part in any hobby and achieve in any sport to their highest potential.
Warning signs of an asthma attack

Warnings signs are outward physical signs that your child is starting to have trouble breathing because of narrowed breathing tubes. These warning signs are different for each child and depend a lot on their age. Many times these early warning signs are subtle and hard to notice. Warnings signs come in two groups - early and late warning signs. Refer to this list when your child starts acting differently and then start rescue medicine.

Early warning signs

You will need to become very observant and learn your child’s unique signs. Knowing early signs can help you act early enough to prevent an asthma episode.

- Cough, especially one that gets worse at night
- Wheezing while breathing out
- Less active than normal, resting often, not keeping up or playing with friends, very restless, listless
- Itch or tickle in throat. Frequent throat clearing.
- Cold symptoms, runny nose, tickle in throat
- Itchy, watery eyes and runny nose from allergies or a cold
- Grumpy or irritable
- Decreased appetite, stomachache, refusing to eat
- For infants – taking longer to nurse or take a bottle, stopping often while nursing or sucking on a bottle to catch breath
- Eating less than the normal amount of breast milk, formula, or food
- Sleeping changes - fussy, irritable, sleeping less or shorter naps, sleeping more than normal, unable to sleep lying flat
- Waking up at night with cough, wheeze or shortness of breath
- Complaining of chest tightness or pain
Late warning signs
As asthma worsens, the swelling inside the breathing tubes increases and the muscles around the breathing tubes tighten further. It may now be quite obvious that your child is having trouble breathing.

Call your healthcare provider right away if any of these late signs are present:

- For infants, head bobbing up and down with each breath
- Vomiting from hard coughing
- More trouble breathing when lying flat
- Trouble talking in complete sentences
- Trouble walking normal distances
- Becoming anxious or scared
- Rescue medicine does not help in 15 minutes
- Using rescue medicine more often than every 4 hours
- Increased work of breathing
- Drop in peak flow of below 50% of best blow (for older children) See page 30-31.

In the case of severe breathing trouble or if skin around lips, eyes or fingernails is blue, or if your child becomes limp or does not respond to you, call 911 at once.
Signs of breathing trouble (respiratory distress)

In order to measure breathing trouble in your child, you need to know the amount of “work” or effort your child is using to breathe:
1. Know your child’s normal breathing rate when sleeping.
2. Know the important warning signs that show increased work of breathing.
3. Call and speak with your healthcare provider if any of the signs below are present.

Signs to look for:

- Sweating – clammy skin
- Nasal flaring
- Grunting or wheezing while exhaling (breathing out)
- Skin color pale, blue-grey color around lips and under eyes
- Retractions – skin indenting around bones in chest (in neck, above collar bone, under breast bone, between and under ribs)
- Abdominal muscles tensed and contracted when exhaling (breathing out)
- Increase or decrease in breathing rate*
- Fussy, agitated behavior or extra sleepiness
- Increased coughing or mucus
- Tripoding – slouching or sitting with arms pressed on a hard surface to help with breathing, with shoulders hunched.

Normal breathing rates

Some children will breathe faster with an asthma episode. **Normal** breathing rates during sleep are:

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Normal respiratory rate (breaths per minute)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-1</td>
<td>30-40</td>
</tr>
<tr>
<td>1-2</td>
<td>22-30</td>
</tr>
<tr>
<td>2-4</td>
<td>20-26</td>
</tr>
<tr>
<td>5-10</td>
<td>18-22</td>
</tr>
<tr>
<td>10-18</td>
<td>16-20</td>
</tr>
</tbody>
</table>

**To find your child’s breathing rate:**

When your child is sleeping, count the number of times his stomach rises and falls in 30 seconds. One rise and fall equals one breath. Double that number to get the breathing rate per minute.
Signs of respiratory distress in your infant

What will my baby look like when they are breathing hard?

- Increased breathing rate (see previous page)
- Stomach sucking in more than usual with breathing
- Retractions – skin pulling in around bones in chest (in neck, above collar bone, under breast bone, between and under ribs)
- Flaring of nostrils
- Head moving back and forth with each breath (head bobbing)
- Noisy breathing (wheezing, grunting, high-pitched noise when breathing in or out)
- Increased coughing or mucus
- Sweating – clammy skin
- Open mouth

What will my baby act like when they are breathing hard?

Because you know your child better than anyone else, you can look for signs or changes that show your child is working harder to breathe. In addition to the physical signs above, here are a few of the most common behavioral warning signs.

- Waking up from sleeping with cough or unable to sleep comfortably
- due to difficulty breathing
- Lethargy (acting tired and weak)
- Fussy, agitated behavior
- Eating less than normal or stopping to rest while eating
- Pulling off the breast or away from the bottle to take a breath

When should I call 911?

Your baby needs medical help right away if they have any one of these symptoms. Call 911 now if:

- They stop breathing for 15 seconds or longer (called “apnea”)
- They have severe difficulty breathing
- They have blue-tinged skin (cyanosis) especially noticeable around the lips, fingernails and gums
- You are unable to wake your baby
Asthma medicines:  Rescue medicines
To take when asthma symptoms occur

Fast-acting bronchodilator

**What do they do?**
Bronchodilator. Opens air tubes by relaxing the muscles around them.
Inhaler or nebulizer. Works in 5 to 15 minutes and lasts 4 to 6 hours.
Tablets and syrup work in 30 to 60 minutes, last 6 hours (rarely used).

**How to take and when**
Inhaled as a mist from a nebulizer, through a mask or from a mouthpiece for older children, or from a metered dose inhaler (MDI).
Also comes in a syrup to be swallowed.
Nebulizer solutions come in premixed vials.
Use albuterol at the first early warning signs of asthma; cough, wheeze, working hard to breathe.

**Side effects**
- A metal-like taste. (Rinsing the mouth with water after taking the medicine will help.)
- Feeling dizzy or shaky
- Headaches
- Heart beating hard or fast
- Feeling hyperactive
- Difficulty sleeping

Photos used with permission from University of Arizona Health Sciences Center
### Asthma medicines: Rescue medicines

To take when asthma symptoms occur

#### Anticholinergic/bronchodilators

<table>
<thead>
<tr>
<th>What do they do?</th>
<th>How to take and when</th>
<th>Side effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bronchodilator. Works differently than albuterol (previous page), but also opens air tubes by relaxing the muscles around the lung tubes. May decrease mucus in air tubes.</td>
<td>Inhaled as a mist from a nebulizer or from a metered dose inhaler (MDI). Works in 20 to 30 minutes; lasts 4 to 6 hours. Note: May be added to albuterol to help open air tubes of lungs.</td>
<td>Side effects are uncommon. A child may complain of:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Dryness of mouth and eyes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Cough</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Blurred vision</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Fast heartbeat</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Reddened skin, rash</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Nausea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Sore throat from aerosol</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Constipation</td>
</tr>
</tbody>
</table>

**Atrovent HFA** (ipratropium bromide)  
**Nebulized Atrovent** (ipratropium bromide)

Photos used with permission from University of Arizona Health Sciences Center
**Asthma medicines: Rescue medicines**

To take when asthma symptoms occur

**Oral steroids**

**What do they do?**

Anti-inflammatory, corticosteroid. Reduces swelling or inflammation inside the airways of the lungs. Air tubes open wider and breathing is easier. Decreases symptoms in 1 to 3 days.

**How to take and when**

Liquid or tablet form is taken by mouth. Take early in the morning according to your child’s Asthma Management Plan.

Dose given as:
- “Bursts” – same dose given every day for 2 to 7 days OR
- “Tapering” – decreasing dose for 5 to 10 days OR
- Every other day – same dose once or twice a day, every other day
- As directed by healthcare provider

**Side effects**

- Upset stomach (give with food in stomach)
- Weight gain
- Increased appetite
- Mood changes (irritability, depression)
- Acne

With long-term use, your child should be monitored closely by your healthcare provider for:
- High blood pressure
- Diabetes
- Reduced growth
- Loss of calcium from the bone, leading to osteoporosis and fractures
- Stomach ulcers
- Cataracts or glaucoma, which can produce blindness
- Increased facial and body hair

Different manufacturers may produce different-looking pills; always check that you have the correct medication before leaving the pharmacy.
Asthma medicines: Controller (maintenance) medicines

To take on a regular schedule to prevent asthma symptoms

Your healthcare provider may prescribe these medicines to reduce or prevent asthma episodes and symptoms. For these medicines to work, you must take them every day, even when you look or feel well.

Inhaled steroids

What do they do?
Inhaled steroids are controller medicines that prevent inflammation and swelling of the air tubes in the lungs when used on a regular basis. Steroids are called anti-inflammatory drugs because they work against (anti) the swelling (inflammation). If the inflammation is prevented, asthma symptoms will be less severe.

How to take and when
Inhaler with spacer: as prescribed.
Diskus-inhaled: as prescribed.
Pulmicort only: inhaled with Flexhaler or nebulizer as prescribed.

Side effects
Because the dose of steroid used in the inhaled form is so small, side effects are minimized. The most common side effect is a yeast infection in the mouth or throat. Using a spacer and rinsing the mouth with water right after the treatment will help prevent this problem. If you are using a spacer with a mask, after medicine is inhaled, use a wet washcloth to wipe off your face and mouth.

Asmaex Twishaler (mometasone)
Alvesco (ciclesonide)
Azmacort (triamcinolone)
Flovent HFA (fluticasone)
Pulmicort Respules (budesonide)
Pulmicort Flexhaler (budesonide)
Qvar (beclomethasone)

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**Asthma medicines:**  **Controller (maintenance) medicines**

To take on a regular schedule to prevent asthma symptoms

Your healthcare provider may prescribe these medicines to reduce or prevent asthma episodes and symptoms. For these medicines to work, you must take them every day, even when you look or feel well.

Always combined with inhaled steroids and **never** taken separately:

**Long-acting combinations of inhaled steroids and bronchodilators**

<table>
<thead>
<tr>
<th>What do they do?</th>
<th>How to take and when</th>
<th>Side effects</th>
</tr>
</thead>
</table>
| Prevents inflammation in lung tubes and prevents tightening of muscles around the breathing tubes. | Diskus – inhaled as directed.  
HFA inhalers – Puffs with spacer as directed. | • Yeast infections in the mouth  
• Hoarseness, throat irritation  
• Headache  
• Stomachache |

Dulera: Approved for kids 12 and over

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**Advair Diskus**  
(fluticasone and salmeterol)

**Advair HFA**  
(fluticasone and salmeterol)

**Dulera**  
(mometasone and formoterol)

**Symbicort**  
(budesonide and formoterol)

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Photos used with permission from University of Arizona Health Sciences Center
Asthma medicines:  Controller (maintenance) medicines

To take on a regular schedule to prevent asthma symptoms

Your healthcare provider may prescribe these medicines to reduce or prevent asthma episodes and symptoms. For these medicines to work, you must take them every day, even when you look or feel well.

Always combined with inhaled steroids and **never** taken separately:

**Leukotriene modifiers**

<table>
<thead>
<tr>
<th>What do they do?</th>
<th>How to take and when</th>
<th>Side effects</th>
</tr>
</thead>
</table>
| Prevents inflammation in lungs by blocking certain inflammatory cells. | Tablets taken by mouth; chewable tablets and granule forms also. Should be taken at bedtime. | Complaints may include:  
• Headache  
• Flu-like symptoms  
• Stomach upset  
• Cough  
• Abdominal pain  
• Stuffy nose  
• Tiredness  
• Rash and fever  
• Behavior change |

Singulair granules  
Montelukast sodium

Singulair tablets  
Montelukast sodium
Steroids

When it comes to asthma medicine, parents seem to have the most questions about steroids. The steroids in medicines are a copy of the same steroids produced naturally in the body, called corticosteroids. The steroids used for asthma and other medical conditions are used because they have powerful protective and healing functions in the body.

How does the medicine work?

Like no other medicine, steroids have great healing capabilities in treating asthma. Steroids work to decrease the amount of swelling (called inflammation) inside the airways of the lungs. When the swelling goes down, the airways open wider so air can move in and out of the lungs more easily. This makes breathing easier and allows more oxygen to reach the body.

How are steroids given?

Inhaled steroids are used as controller medicine. When used daily, they help to prevent the airways of the lungs from swelling. They make the lungs less “twitchy” or less reactive to a trigger. This decreases asthma symptoms and makes your child’s asthma more controllable and manageable.

Oral steroids (pills or liquid) are usually not given daily. Most often they are used as a rescue medicine during an asthma attack or over longer periods because of their strong healing power. Oral steroids are usually given for a short period of time, such as 3 to 7 days, called a “burst.”

Are there any side effects?

When steroids are used properly, the side effects are usually few. Your healthcare provider will prescribe the best dose to control asthma symptoms and provide the fewest side effects.

Though most of the side effects shown in the box on this page come with oral steroids, high doses of inhaled steroids can result in some of these side effects, too.

Some side effects of steroids

With inhaled form:
- Yeast infection of mouth and throat. To help, use a spacer and rinse after each dose. If using a spacer with mask, wipe off your child’s face after each use.

With oral (pill form):
- Stunted growth. Growth suppression is seen most often when taking oral steroids for long periods of time. This is not usually a problem when taking short courses, or “bursts,” of oral steroids.
- Loss of calcium from the bone
- Irritability
- Increased appetite
- Poor sleep
- Increased blood pressure
- Diabetes
Are inhaled steroids safe for my child to take?

Steroids for asthma are more properly called corticosteroids. Corticosteroids are not the same as anabolic steroids that bodybuilders take to build big muscles. They are a copy of the same steroids made naturally by your body and have powerful healing functions. Many children with asthma use controller or preventive medicines that contain a low dose of an inhaled steroid. Inhaled steroids go directly to the lung tissue where they are needed, so very little, if any, are absorbed into the rest of the body. When prescribed for asthma, the lowest possible dose is used to keep asthma in control. Your child will be monitored closely when you go to regular clinic visits to your asthma care provider.

Research indicates that inhaled corticosteroid medicines are safe for children to take for asthma.

Daily use of inhaled corticosteroids can cause a small reduction in height of children of up to 18 years of age with persistent asthma. Research from July 2014 suggests that in the first year of treatment, children treated daily with low- to medium-range inhaled corticosteroids may grow about half a centimeter less than those not using these medicines. And the medicines affect growth less in the following years.

Research has also shown that low-dose inhaled corticosteroids have not caused problems with blood sugar, bone strength or cataracts. Be sure to talk with your healthcare provider if you have concerns about asthma medicines, and keep up with asthma research, as more information is published. See the Resources section.

The safety of daily low-dose steroids

It may be of value for you to add up the numbers. A low dose every day (typically 44mcg per puff, 2 puffs, 2 times a day) for one year is still less of a dose than one burst of oral prednisone needed when your child’s asthma flares.

Here’s the math comparing inhaled controller steroids with a burst of steroids by mouth.

Example of a 2-year-old weighing 13 kg getting Flovent

<table>
<thead>
<tr>
<th>Total dose in one year on daily inhaled steroids:</th>
<th>Total dose in one burst of oral prednisone:</th>
</tr>
</thead>
<tbody>
<tr>
<td>44mcg/puff x 2 puffs, 2 times a day = 176 mcg/day</td>
<td>2 mg/kg/day for 5 days = 130 mg per burst</td>
</tr>
<tr>
<td>176 mcg/day x 365 days in a year = 64.2 mg per year</td>
<td></td>
</tr>
</tbody>
</table>

So, your child gets twice as much steroid in a 5-day burst as they do taking daily inhaled steroids for a whole year. Therefore, avoiding flares by staying on daily lower-dose inhaled steroids means less steroids overall and has fewer side effects.
Caring for Your Child’s Inhaler

What you should know about priming and cleaning inhalers

Why is priming and cleaning an inhaler so important?

Cleaning your inhaler and mouthpiece often will keep germs from growing on the surface — germs that can cause lung problems.

In addition to using good breathing technique and a spacer with your inhaler, priming is very important. Priming is preparing for your dose by releasing several practice sprays into the air first, to bring up the medicine. Priming the inhaler ensures that you will get the right amount of medicine when you use it. On the next page is a list of common inhalers and priming instructions for each type. Be sure to ask your child’s healthcare provider for step-by-step instructions for using your particular inhaler, then practice!

Priming your Metered Dose Inhaler (MDI)

The first time you use a new MDI you will need to prime your inhaler. If you have not used your inhaler for several days or weeks, you may need to prime your inhaler again. (This means squirting a few practice sprays.) To prime your MDI, remove the cap, shake the inhaler, and then spray it once, pointed away from your body. The instructions that came with your inhaler will tell you when your MDI should be primed and how many times the MDI should be shaken and sprayed when being primed. Each inhaler may recommend a different number of times to shake and spray away from you and how often you need to do this.
### Priming and cleaning chart

<table>
<thead>
<tr>
<th>Name of inhaler</th>
<th>Number of sprays to prime</th>
<th>Prime if you haven't used the inhaler in the last:</th>
<th>Cleaning</th>
</tr>
</thead>
</table>
| Advair HFA      | 4                         | 2 weeks                                          | • Use a dry cotton swab to clean the small, circular opening where the medicine sprays out of the canister. Carefully twist the swab in a circular motion to take off any medicine.  
• Wipe the inside of the mouthpiece with a clean tissue dampened with water. Let the actuator air-dry. |
| Flovent         | 4                         | 7 days                                           | • Use a dry cotton swab to clean the small, circular opening where the medicine sprays out of the canister.  
• Wipe the inside of the mouthpiece with a clean tissue dampened with water. Let the actuator air-dry. |
| QVAR            | 2                         | 2 weeks                                          | Wash the mouthpiece through the top and bottom with warm running water for at least 30 seconds. Let air-dry. |
| Albuterol       | 4                         | 2 weeks                                          | Wash the mouthpiece through the top and bottom with warm running water for at least 30 seconds. Let air-dry. |
Using a Metered Dose Inhaler (MDI) with Spacer

Using an inhaler correctly without a spacer takes a lot of practice. Unless your child’s technique is really good, most of the medicine is likely to hit the tongue or the back of the throat. This will not be helpful or allow your child to get the appropriate dose. Using a spacer with the MDI makes the treatment easier. Spacers hold the medicine until you are ready to breathe it in. They help the medicine get down to the small airways and can help reduce side effects. The AeroChamber is one of many types of spacers on the market.

**About HFA inhalers**

The letters HFA in an inhaler name refer to a new propellant: hydrofluoroalkane. Older inhalers use CFCs (chlorofluorocarbons). HFA is less harmful to the environment than CFCs are. These inhalers contain finer particles that come out as a soft puff rather than a strong spray.

**Directions**

Read through all steps before beginning.

Step 1........Prepare your metered dose inhaler (MDI) as usual. Remove the cap on the spacer’s mouthpiece.

Step 2........Shake the MDI rapidly for five seconds.

Step 3........Insert the MDI (inhaler) into the spacer.

Step 4 .......Blow air out of lungs and put spacer in mouth.

Step 5........Press down on the inhaler, releasing medicines to fill the spacer.

Step 6 .......Seal your lips around the mouthpiece of the spacer. Take in a slow, deep breath to inhale the medicine. There should be no whistle sound.

Step 7 .......Hold your breath and slowly count to 10. (Parents: Teach your child to try hard to hold their breath for a full count of 10 after breathing in the medicine.)

Step 8 .......Release your breath and breathe normally.

Step 9 .......Wait **15 seconds**.

Step 10.......Repeat the steps for each additional prescribed puff. Begin with shaking the MDI again and go to Step 4.
Using a Spacer with Mask

The AeroChamber* with mask is helpful for very young children or anyone who is having trouble using a regular spacer. Aerochambers are latex- and PBA-free.

Directions

Read through all steps before beginning.

Step 1. Prepare your metered dose inhaler (MDI) as usual. Remove the cap on the spacer’s mouthpiece.

Step 2. Shake the metered dose inhaler (MDI) rapidly for 5 seconds.

Step 3. Insert the MDI into the spacer.

Step 4. Explain to your child that you will put the mask over his nose and mouth, but he can breathe normally.

Step 5. While keeping a good seal on the mask around your child’s mouth and nose, press down on the canister once to release the medicine.

Step 6. Hold the mask in place and have your child take 3 to 6 breaths to empty the chamber.

Step 7. Remove the mask/spacer unit from your child’s face and wait 15 seconds.

Step 8. Repeat the procedure for each additional prescribed puff. Shake the inhaler and begin with Step 5.

Step 9. After using a mask, always wipe the skin around your child’s mouth with a wet cloth.

Weekly cleaning of spacer with mouthpiece or mask

1. Remove the rubber-like ring from the end of the spacer. Don’t remove the mask or mouthpiece.
2. Wash/swish the spacer in warm, soapy water (use mild dish soap), then rinse.
3. Set aside to dry.
4. When completely dry, reattach the rubber-like ring to the end.
Use of the flexhaler (for Pulmicort)

Directions

Read through all steps before beginning.

Step 1.........Remove cap.
Step 2.........Twist the dark brown grip fully to the right and then fully to the left.
Step 3.........Listen for a click.
Step 4.........Place the turbohaler to your mouth.
Step 5.........Close your lips firmly around the mouthpiece.
Step 6.........Inhale slowly and deeply through the mouthpiece, until you can’t breathe in any more. (If you hear a whistle, you are breathing in too quickly.)
Step 7.........Hold breath for a count of 10.
Step 8.........Let out breath.
Step 9.........Replace cap.
Step 10.......Rinse, gargle or brush teeth.

Other important use tips

• Dose counter should read “120” at start.
• Prime or prepare a new inhaler by releasing 2 “test sprays” — the inhaler does not need to be primed again in the future for any reason.
• Hold the mouthpiece upright while loading the canister.
• Inhale the medicine forcefully.
• Rinse mouth with water and spit after each use.
• Clean the mouthpiece at least once a week by wiping the outside of the mouthpiece with a dry tissue.
• Never immerse the canister in water.
Use of the Diskus

Directions:

Read through all steps before beginning.

Step 1........While holding the diskus in one hand, place the thumb of your other hand on the grip and push away until the mouthpiece appears and snaps into position.

Step 2........Hold the diskus in level position (horizontal). Don’t tip the diskus, as there is a chance of losing the medication.

Step 3........Slide lever away from you as far as it will go until you hear a click.

Step 4........Exhale.

Step 5........Put the mouthpiece to your lips as shown in the photo.

Step 6........Close your lips firmly around the opening.

Step 7........Breathe in slowly and deeply through the diskus.

Step 8........Hold breath for 10 seconds.

Step 9........Let out breath.

Step 10......Close the diskus by placing your thumb in the grip and pulling toward the center and mouthpiece.

Step 11......Once you are done, brush teeth, rinse mouth or gargle.

Other important use tips for the Advair Diskus

• Dose counter should read “60” at start.
• Never wash the mouthpiece or any part of the Diskus, and keep it dry.
• Never immerse the canister in water.
Hand-held nebulizer

What is a nebulizer?
It is a device that helps you take your liquid inhaled medicine. The nebulizer is the mouthpiece or mask and cup that delivers the medicine into your mouth in a very fine mist. The cup holds the medicine. The compressor looks like a machine and supplies the power to make it work.

Why does my child need it?
The nebulizer sends the medicine straight into the lungs. This is an easy way to get the medicine to the right place. Sometimes they are used instead of or in addition to a metered dose inhaler.

How do I get a nebulizer?
Your child's healthcare provider will order nebulizer treatments by a prescription. Most health plans cover 80-100% of the rental or purchase price. When the medical supplier gets the nebulizer order and payment approval, they will call you. Together, you will plan a time when they can deliver the machine and teach you how to use and clean it and change the filter. When the nebulizer needs new parts, you can get these from the same medical supplier.

What can I do while I’m using the nebulizer?
• Read a book
• Watch TV
• Work on school work
• Listen to music

Hand-held nebulizer
Face mask
Cup for medicine
Compressor
Cleaning your hand-held nebulizer is important!

It is possible to pick up a lung infection from using dirty equipment. Keeping your nebulizer clean stops the spread of germs that can make you sick. Rinse out the nebulizer after each treatment and wash it daily. Twice a week after washing, soak the nebulizer in a disinfectant, rinse and air dry.

How do I clean it?

Clean the nebulizer parts after you use them each time.

1. Take apart the plastic parts of the nebulizer.
2. Swish each piece in warm soapy water.
3. Rinse each piece under warm running water.
4. Let each piece air dry on a clean dish towel or a paper towel.
5. When the pieces are completely dry, put the nebulizer back together. Store it in a clean, dry plastic bag.

How do I disinfect my hand-held nebulizer?

Disinfect your nebulizer 2 times each week. There are 4 ways to disinfect your nebulizer. Choose the one that is the easiest for you.

Four options for disinfecting

Clean your nebulizer as you normally do after you use it.

1. Soak the nebulizer parts in a container of alcohol (70% isopropyl) for 5 minutes. Rinse with water and allow the parts to air dry.
2. Mix a bleach solution of 1 teaspoon of household bleach with 1 cup (8 oz) of water. Soak the nebulizer parts in the solution for 3 minutes. Rinse with water and allow to air dry.
3. Soak the nebulizer parts in a container of hydrogen peroxide (3%) for 30 minutes. Rinse with water and allow the parts to air dry.
4. Boil the nebulizer parts in water for 5 minutes. Allow the parts to air dry. This method should only be used for durable nebulizer cups.

To dry the tubing

Attach the tubing to the compressor. Turn on the compressor and let it run for 1 or 2 minutes. The blowing air will dry out the tubing. Use a paper towel or clean hand towel to dry the other parts.

If the nebulizer is dirty, you might pick up germs and get sick. It may be dirty even though you can’t see any dirt.

Cleaning supplies you will need

- Liquid detergent; it should be a clear dish soap that has no added creams (i.e., clear Joy)
- Bleach solution (see below)

Bleach solution recipe

Mix a 1 teaspoon of household bleach with 1 cup (8 ounces) of water.
Peak flow meter

What is a peak flow meter?
A peak flow meter is a hand-held device that you blow into in order to measure air flow through the air tubes. It is usually taught to children starting at age 4 to 5 years.

What does it measure?
The peak flow meter measures how fast air moves out of the lungs during one quick, hard outward breath; this measurement is called the peak expiratory flow rate, or PEFR. Everyone’s PEFR is different.

Why use a peak flow meter?
Peak flow meters come in different shapes, but they all work the same way:

- It can help you tell whether your child’s asthma is acting up and by how much, so you can take action. If the peak flow numbers are dropping, your child’s asthma is getting worse.
- When you call your healthcare provider during an asthma episode, you will have a peak flow “number” or “score” to report instead of just a “feeling” about how tight your child’s airways are.

Finding your scores
Work with your healthcare provider and follow the steps in the box on the next page to find your child’s peak flow zones. Use these numbers for your Asthma Management Plan (see inside this booklet).

First, find your child’s personal best peak flow by measuring their peak flow daily (or as prescribed by your healthcare provider) for 2 to 4 weeks when they are symptom-free. Keep a record on a calendar. Using your child’s personal best score, figure out their green, yellow and red zones, as with the colors of a traffic light.

- **Green** (normal zone): Scores within 80-100% of their best score. This means their asthma is under control.
- **Yellow** (caution zone): Scores within 50-80% of their best flow zones. You need to check your asthma plan to bring their asthma under control. This may mean changing medicines and reducing triggers agreed upon by you and your healthcare provider. You may want to call your healthcare provider at this point.
- **Red** (danger zone): Scores less than half (50%) of their best peak flow. Call your healthcare provider right away.
How to use a peak flow meter

1. Set arrow at zero.
2. Stand up and take a deep breath in.
3. Seal lips around the mouthpiece.
4. Blow as hard and as fast as able. (Give a “fast blast.”)
5. Write down the number at the arrow.
6. Move arrow back to zero and repeat steps 2-5.
7. Record the best of the two blows on a chart or calendar.

Do a peak flow every day at the same time, morning and evening, until your next clinic visit. Bring your calendar or chart to clinic with you.

Peak flow plan

To figure out your child’s peak flow zones, follow this example:

Example:

Best Blow...........................................................................................................................................250
Green Zone – 80% and above (.80 x 250 = 200)........................................................................200 to 250
Yellow Zone – 50% to 80% (.50 x 250 = 125)........................................................................125 to 200
Red Zone – less than 50% (.50 x 250 = 125)...........................................................................125 or less

The score of my best blow when my lungs are clear and asthma-free is ______

- My Green Zone (80-100% of best blow) _________ to __________
  Action Plan

- My Yellow Zone (50-80% of best blow) _________ to __________
  Action Plan

- My Red Zone is __________ (less than 50% of best blow) or less
  Action Plan
Asthma triggers

Asthma flares or episodes can come and go, often “triggered” by something from the environment the lungs come into contact with. The symptoms can be hidden at first, or happen right away when exposed to a trigger. Common triggers include:

### Infections
- Colds or upper respiratory infections
- Ear infections
- Sinus infections
- Influenza (respiratory flu)
- RSV (respiratory synticial virus)

### Allergies
- Cat, dog, hamster, bird or other furry or feathered warm-blooded animals
- Cockroaches
- Grass, pollen, house dust mites, mold, trees, weeds
- Some foods

### Irritants
- Secondhand smoke (in the house or in the car – even after the smoker has gone). Anything that is lit, legal or illegal, can be an irritant – tobacco, marijuana or illegal drugs that are smoked.
- E-cigs and vapor cigarettes
- Perfume, paint, hairspray or any strong odor
- Wood smoke from a fireplace, camp fire, barbeque, or fire works
- Household products (cleaning products, paint, paint thinner, furniture polish, starch and cleaners, air fresheners)
- Air pollution

### Other
- Cold air
- Weather changes
- Hard exercise
- Heartburn or gastroesophageal reflux disease (GERD), especially in babies
- Strong emotions (laughing, crying, yelling, fear, stress)

### Environmental controls are key

Each child’s asthma triggers are unique. Coming in contact with just one trigger can start an episode, so can a combination of more than one trigger. You will want to learn what triggers your child’s asthma and be willing, in some cases, to make big changes to control them. This can mean giving up the family pet, ripping out carpet, changing cleaning products and removing tobacco smoke from the home.

Clearing triggers from your home and avoiding contact with them will help your child breath better. Environmental controls are the first step to avoiding asthma flares and may reduce the amount of medicine your child will need.

See “Environmental control tips” on the next page for more tips on how to allergen-proof your home.

In cat allergies, the saliva is the main allergen.
## Environmental control tips

Here are some of the most common asthma triggers and steps that you can take to reduce exposure. These steps may reduce some of the medicines your child needs.

<table>
<thead>
<tr>
<th>Triggers</th>
<th>Steps to reduce exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Viral infections</strong>&lt;br&gt;Upper respiratory tract infections caused by viruses (head colds)</td>
<td></td>
</tr>
</tbody>
</table>
- Keep your child away from others who have colds. Cold viruses are the most common asthma trigger in children.  
- **Washing hands often is one of the best ways to stop the spread of germs.** Whenever possible, use water and soap.  
- **Sneeze into a tissue and toss it right away.** |
| **Irritants (tobacco smoke and wood smoke)** |  
- Do not allow smoking in your home or car. Tell your relatives and friends how harmful cigarette smoke is to people with asthma.  
- If you want to stop smoking, now would be a great time. Ask your healthcare provider for help.  
- Avoid being around wood smoke from a wood stove or fireplace if your child has asthma. |

Use your nose as your guide; if you or others can smell the cigarette smoke, it is harmful to your child’s lungs and can cause an asthma attack. Wood stoves or fireplaces are not good choices of heating for people with asthma and allergies. They deposit a lot of fine particles into the air, both inside and outside the home.
Triggers

Allergens (dust mites)
Dust mites are too small to be seen. They live and breed where there is warmth, moisture and rubbed-off skin cells in places such as the mattress, box spring, pillows, bedding, curtains, carpets and rugs, upholstered furniture and stuffed toys.

Steps to reduce exposure

- Encase your child’s mattress and box springs in a zippered plastic allergy cover, using duct tape over the zipper to make a tight seal. We have listed several sources where you can buy breathable mattress encasings in the Resources section of this booklet.
- Put pillows in airtight covers, or use dacron fiberfill pillows labeled as machine washable. Wash monthly.
- Wash all bedding, including blankets, sheets, pillow cases and mattress pad, in hot water every two weeks or as often as you can. Your water must be 130 degrees to kill the dust mites. Turn the water heater up to 130 degrees for your wash load, then back down to 120 to prevent accidental scalding in young children.
- Keep only one or two stuffed toys in the child’s bedroom and wash any in hot water with other bedding.
- Choose lightweight, machine-washable curtains or window shades. Avoid mini-blinds and heavy drapes because they collect dust.
- Try to keep only a few items of clothing in the bedroom closet. Store extra clothes and toys elsewhere, and always keep the closet doors closed, since dust easily settles in closets.

Other dust sources

- Forced-air heating circulates a lot of dust. Place a filter or cheese cloth between the air duct and vent cover to reduce the amount of dust that enters the room.
- Change furnace filters monthly. If the furnace does not have a filter, it must be kept as clean as possible by having air ducts vacuumed once a year by a service agency. Clean electric baseboard units monthly by removing the front panel to gain access to the metal “spines” where dust settles.
- Wash floors with a sponge mop weekly, and use washable area rugs instead of wall-to-wall carpeting. If it is not possible to remove the carpet, vacuum at least twice weekly while the child is out of the room and will not return to the room for at least two hours.
Triggers

Indoor mold
Mold tends to grow in areas that are often damp, such as bathrooms, kitchens and basements. Molds also form in house plants, in humidifiers or vaporizers. The mold can become airborne and inhaled from using vaporizers, making you sick. Humidifiers may put a lot of moisture into your home, which promotes mold growth.

Steps to reduce exposure

To reduce humidity in your home to below 50 percent:
- Fix leaky faucets and pipes.
- Do not use vaporizers or humidifiers.
- Limit house plants in the home.
- Line the ground under your house (crawlspace) with heavy plastic sheeting (Visqueen) to block ground moisture from entering up into your home.
- Scrub surfaces often with X-14 or Clorox, diluted 1 part to 3 parts water, to prevent mold growth.

Animal dander
Even if your child does not show a reaction to pet dander on a skin test, many children will become allergic to pets when placed in the same home with them. Some children will have non-allergic reactions due to irritants from the pet. Any warm-blooded animal can cause an allergy response. Cats, dogs, birds, hamsters and horses are just a few. Cats are the most common.

- Keep pets outside or at least out of your child’s bedroom.
- Keep pets off upholstered furniture and carpets.
- You can consider washing the pet weekly to decrease the amount of dander.
- Choose a shed-free variety of dog, like a poodle or Wheaten terrier. This may reduce the irritants in the air, but know that if your child is allergic to dogs, they will still be allergic to these dogs. They are not allergy-free, just cause fewer irritation reactions.
Is my smoking really harmful to my child with asthma?

Yes! When you smoke anything near your child — cigarettes, e-cigarettes or marijuana — they breathe in the smoke, too. Smoke from the burning end of the cigarette is not filtered. It has:

- Poisons, like arsenic and cyanide, that cause cancer
- Tiny particles of soot and tar that travel deep into the lungs
- Toxic gases, like carbon monoxide
- E-cigarette vapor contains formaldehyde, acetaldehyde, benzene and other potential irritants

And, the hot air dries out the lining of your child's airways and makes them sore. The airways start to swell, get narrower and make more mucus.

Don’t the asthma medicines protect my child?

No. If your child is living in a home with a smoker, even though they are taking their medicine, they can get sicker more often. Your child will:

- Need more asthma medicine to counteract the smoke
- Get more colds
- Get more ear infections
- Get more coughing, wheezing and stuffy noses
- Need to go to the emergency room more often

What can I do to keep my smoke away from my children?

- Do not allow anyone to smoke anywhere inside your home or car — even when your child is not present.
- Post “NO SMOKING” signs in your home and car to remind yourself and others.
- Try to quit smoking — this may be the right time.
- If you can’t quit, smoke outside only!
  - Know that smoking out an open window or just in a certain room like a bedroom does not keep smoke away from your children.
  - Do not smoke in your car, even if your child is not in the car.
  - Pick a jacket or coat from your closet that you wear outside when smoking and remove before coming back into the house.
- Keep your hair and clothes clean when you are around your child.
- Smokers have a poor sense of smell and cannot smell the smoke themselves. But if anyone can smell smoke, it's getting into your child's lungs.

Resources to quit smoking

- Washington State Tobacco Quit Line: 1-877-270-STOP
  Spanish: 1-877-2NOFUME
  TTY: 1-877-777-6534
What about allergies?

Allergy can be an important “trigger” for many children with asthma. In babies and toddlers, allergies are not common, but sometimes, food allergies can trigger asthma. By around age 5 years, allergies to trees, weeds and grass pollens, molds, dust mites and animal dander become more common.

What is an allergy?

An allergy is an abnormal response by the body to a usually harmless substance. The substance that causes this response is called an allergen. Asthma can be one of the responses. Other symptoms of allergies can include:

- Sneezing
- Watery/itchy eyes
- Running nose
- Headaches
- Vomiting or diarrhea
- Skin rashes or eczema

How do I know if my child is allergic to something?

Sometimes it is obvious. For instance, if your child gets red, watery eyes, a runny nose, coughs or wheezes every time he or she goes to a friend’s house and pets the cat, your child is probably allergic to cat dander. Outdoor pollen allergies can be tracked by the season (usually spring or fall) when they occur.

If you think your child has an allergy, speak with your child’s healthcare providers. They might suggest that you see an allergist. An allergist is a healthcare provider who specializes in allergies. The allergist will take a complete history and may suggest allergy testing. Allergy tests are a series of skin or blood tests designed to find the specific allergens to which you are sensitive.

Can allergies be cured?

There is no “cure” for allergies, but there are ways to reduce or control some allergens. When the specific allergens your child responds to are identified, it may be possible to simply avoid them — for example, animal dander. Some allergen exposure can be reduced through environmental control measures that are described later in this booklet.
Allergy medicines

Allergy shots

If allergies are severe, some children may benefit from allergy shots. Allergy shots contain a tiny amount of an allergen injected into your body. It is small enough to avoid a reaction, but large enough to get the body’s immune system used to recognizing the allergen. Slowly, the amounts of allergen are increased, until the allergen no longer causes a reaction. While good results should occur in 6 to 12 months, the therapy should be continued for several years. If results are not seen in a year, this therapy should be stopped.

For more information on allergy shots, ask your healthcare provider. Usually, allergy shots are tried only after avoidance techniques, environmental controls and medicines are not enough to control symptoms.

Antihistamines

(Allegra, Claritin, Zyrtec, Benadryl, Chlortrimeton)

An antihistamine helps to stop the release of histamine. Histamine is a substance the body makes when exposed to an allergen. It can cause the symptoms of allergy, like runny nose and itchy eyes.

Important: Antihistamines work best if taken before you come in contact with the allergen.

Will antihistamines help asthma symptoms?

Antihistamines do not treat asthma symptoms.

Are there any side effects?

Some of the antihistamines can make your child tired and cause dry mouth. Ask your healthcare provider about the newer types that don’t make your child sleepy.

How do you use them?

Antihistamines are swallowed and come in syrup or pill form. Some antihistamines are given only once a day and others more often. It is best to take them at bedtime to reduce drowsy effects during the day. Some of the antihistamines listed above are prescription, and some are not. Some over-the-counter antihistamine products also contain decongestants. Ask your healthcare provider about these before you use them.
Nasal steroids
(Beconase AQ, Flonase, Rhinocort, Nasonex, Nasocort)

Much like inhaled steroids work for the child’s lungs, nasal steroids decrease inflammation in the child’s nose.

**How can nasal steroids help my allergies?**
The allergy response can cause a stuffy and drippy nose. These symptoms can be reduced if the inflammation in the nose from the allergy is treated with nasal steroids. This can also help to decrease sinus infections that allergy sufferers are prone to.

**Are there any side effects?**
Because they are sprayed directly in the nose, not much medicine gets into the bloodstream. Therefore, there are very few side effects. Typical side effects are redness and soreness of the inside of the nose and sometimes nose bleeds. If this occurs, stop taking it and let your healthcare provider know.

**How do you use them?**
Nasal steroids come in a bottle with a nozzle that puts out a fine mist spray. It is sprayed directly into each nostril once or twice per day after cleaning out or blowing your nose.
Exercise-induced asthma

Exercise is good for any child, but it is especially good for children with asthma. Exercise fine-tunes the lungs and heart so they can work better. Yet, for some children, such activity causes asthma symptoms.

As a child starts working and breathing hard, the air into the lungs gets dry and irritates the airways. The result is coughing, wheezing or tight chest. This is called “exercise-induced asthma.”

How do I know if my child has exercise-induced asthma?

The most common signs of exercise-induced asthma are coughing, wheezing, shortness of breath and/or tight chest within the first 5 to 15 minutes of activity. Every time a child starts to run or play, they cough or feel tight in the chest. The symptoms “peak” 5 to 10 minutes after the workout stops and last for up to 30 minutes. Your child may have had these symptoms with exercise for so long that they don’t know it is not normal to cough a lot after playing.

If your child is acting in these ways during exercise, talk with your asthma care provider to adjust the treatment plan:

- Is your child unable to keep up with classmates or teammates?
- Does he cough much of the time?
- Is your child the first one to stop and rest?
- Does she enjoy joining in, or would she rather not play?
How is exercise-induced asthma treated?
There is a simple and effective way to treat exercise-induced asthma. A healthcare provider prescribes an inhaled short-acting bronchodilator. Your child takes it 10 to 15 minutes before starting exercise or activity. It prevents asthma symptoms for up to 4 hours.

How do we handle P.E. class?
Exercise-induced asthma has nothing to do with being “out of shape.” At times, P.E. teachers and coaches may accuse a child of trying to get out of exercising. In fact, most children like to run and play with their friends and classmates. They do not want to seem different, so will try and play as much as they can. Using the prescribed medicine before exercise can allow your child to join in fully with little or no symptoms. Write your asthma care plan to include pre-treatment with a bronchodilator before P.E. to avoid confusion about symptoms.

Which sports are best for my child?
When asthma is in good control, any type of exercise should be fine. Stop-and-go sports with periods of rest are least likely to cause asthma. Encourage your child to play whatever sport they enjoy most.

- Good sports choices include baseball, softball, tennis, downhill skiing, golf, dance and some track and field events.

- Sports that require sustained activity without rest periods like cycling, distance running, basketball and soccer may also be just fine with pre-treatment.

- Swimming in a heated pool is often a good choice because the warm air is less irritating to the lungs.

Fact: Exercise-induced asthma (EIA) affects as many as 20% of highly competitive athletes and one in every six Olympic athletes, says the American Academy of Allergy, Asthma & Immunology (AAAAI).

Hydrate, warm up and cool down before and after hard exercise.
The stress of having asthma

Asthma attacks can be very scary for children. Just the thought of not being able to get enough air can produce anxiety. This stress can result in more asthma symptoms, leading to a cycle that is hard to control. Having a chronic condition such as asthma affects your child every day. They must:

- Learn to control their asthma, which requires thinking and planning ahead
- Always carry rescue medicines and take medicines (sometimes in public)
- Sometimes restrict their fun activities
- Interrupt their normal life to see healthcare providers more often than most kids

All of this can make your child feel angry, sad and irritated. A child may decide not to take their medicine at all any more and maybe even think about quitting many activities.

What can I do to help?

Stay active and informed in your child’s asthma care, no matter what their age:

- Help find and reduce asthma triggers in their life. Know when and if they took their medicine and how often they need it. Notice if they keep up with their friends and encourage them to keep up with their favorite activities.
- Help your child learn how to control their asthma so they can be the boss of it.
- During an asthma attack, stay calm; use rescue medicines and relaxation techniques to help improve your child’s symptoms.
- Help your child learn how to relax with quiet activities. Read a book together or watch a video.
- Try one or more of the relaxation therapies listed in the box at right.

What about complementary asthma therapy?

There are many opinions about complementary (also referred to as alternative medicine) therapies for helping children with asthma. There is no conclusive, research-based medical proof as to the effectiveness or safety of these therapies for children at this time. However, research is ongoing and you may wish to learn more.

You can read about this in the current national asthma guidelines: www.nhlbi.nih.gov/guidelines/asthma/07_sec3_comp4.pdf

Lowering stress

To decrease chronic stress, have your child try these relaxation therapies:

- Yoga – may lower stress with specific breathing techniques, meditation and body postures
- Massage therapy
- Progressive muscle relaxation therapy with biofeedback – focuses on relaxation of each of the body’s muscles, one by one, often though audio tapes
- Physical activity, sports, hobbies
The asthma-friendly school or daycare

Since most children spend a lot of time in school or daycare, it is a good idea to work closely with the school nurse, teachers and day care providers.

**Talk with your school nurse and daycare leader**

Before the school year starts, meet with the school nurse. Let them know that your child has asthma. They will inform all teachers, coaches, bus drivers and other school personnel about your child’s asthma plan. Have this same meeting with your day care’s lead staff.

When you meet, keep the plan as simple as you can. Complete the Asthma Management Plan, but also write down answers to the following:

- Early signs of your child’s asthma flare-up
- What to do if your child is having a flare up, including emergency care and information
- Instructions for peak flow meter if used
- Any special instructions for exercise, including P.E. pre-treatment plans
- Daily medicine schedule that, if possible, allows for very few, if any, doses during the school day
- History of your child’s asthma including recent hospitalizations
- How to reach you in case of emergency with back up numbers and names of others to call in case you cannot be reached
- Name and phone number of your child’s healthcare provider
- Plans for handling field trips
- Environmental triggers and food allergies
- Whether your child is able to self-treat if asthma flares (Can they carry their inhaler or will they have to go to the school nurse to get it?)
- When the school nurse is not there, who is responsible to help your child?

When you meet with your school nurse or daycare leader, you are responsible for bringing with you:

- All your child’s current medicines, including spacers and nebulizers
- A copy of the Asthma Management Plan from the back of this book

Remember to check in with your school nurse or daycare provider often to keep your child’s Asthma Management Plan up to date. Make sure you have extra supplies of medicines and other items at school and daycare.
Creating an asthma-friendly school or daycare

Here are some ways to work with your child’s teacher to create a more asthma-friendly, trigger-free classroom and daycare environment. Ask if they are willing to:

- Use “dustless” chalk or dry-erase boards.
- Avoid using strong cleaning products or soaps.
- Ask students and teachers to refrain from wearing perfumes or strong hairspray.
- Ask for a “No warm-blooded classroom pet” policy. Fish and reptiles are a better choice.
- Keep art supplies or other items with strong smell or odor outside of classroom in well-ventilated areas.
- Clean classrooms, gyms and locker rooms often to prevent mold growth and dust, and to provide pest control.
- Contact you when painting, carpet cleaning, or school ground yard maintenance like mowing, spraying or trimming are scheduled.
When you need to call for help

When asthma is flaring up, you need to call your healthcare provider. Be prepared with answers to these questions:

1. What symptoms are present. When did they start?
2. What medicines you’ve given for asthma in the past 24 hours. State dose and number of times dose given.
3. Did the medicine help, and for how long?
4. What medicines are taken every day, even when well?
5. What may have triggered this episode?
6. Always state the diagnosis of asthma and any other health problems.
7. Mention any history of a need for prednisone or any emergency room visits, hospitalizations or intensive care stays due to asthma.

You can learn to better control asthma. These steps can help:

- Make regular visits with a healthcare provider who knows current asthma treatment.
- Make an asthma plan with your healthcare provider (and your child) and follow it closely.
Asthma resources for families

You can reach these organizations through a phone call or on the Internet:

**Allergy and Asthma Network/Mothers of Asthmatics, Inc.**  
www.aanma.org  
1-800-878-4403  
Web site has asthma information in simple terms and speaks to families living with a child who has asthma. Offers useful newsletter to families, asthma equipment products, books, videos, etc.

**American Lung Association**  
www.lungusa.org  
Lung Helpline, 1-800-lung usa (1-800-586-4872)  
Call this number to speak with a counselor or nurse to get your asthma questions answered 7 a.m. to 9 p.m. Central Time, Monday through Friday. Calls are free, and in Spanish, too. Families can receive free asthma information packets and help to quit smoking.

**Asthma and Allergy Foundation of America**  
www.aafa.org  
1-800-727-8462  
Deals primarily with asthma and allergies. Order books, pamphlets, videos, etc.

**American Academy of Allergy, Asthma and Immunology**  
www.aaaai.org  
414-272-6071  
Specializes in asthma and allergies, provides information on downloading pediatric asthma guidelines based on the NHLBI (see below).

**National Heart, Lung, and Blood Institute (NHLBI) Information Center National Asthma Education and Prevention Program (NAEP)**  
www.nhlbi.nih.gov  
301-592-8573  
Provides many educational books and other materials. Has many links to other informative sites, provides free download of national asthma guidelines.

**Master Home Environmentalist program**  
In Seattle, call 206-441-5100  
Speak with an asthma outreach worker for a free home visit on how to reduce indoor air pollutants and improve indoor air quality. Find a do-it-yourself assessment at www.alaw.org under Master Home program.

**National Jewish Medical and Research Center**  
www.nationaljewish.org  
1-800-222-5864  
Lung disease/asthma center located in Denver. Information regarding asthma treatments, research results and ongoing projects.
Allergen hypoallergenic products – mattress encasings
- www.allergycontrol.com
- www.natlallergy.com
- Bed, Bath & Beyond or Target department store

Kids’ Health
www.kidshealth.org
Go to Kids’ Asthma Center for kid-friendly handouts, interactive games, asthma
dictionary, movies and more!

Note: The inclusion of any resource or link does not imply endorsement by Seattle
Children’s. Seek the advice of your child’s healthcare provider before you act or rely
upon any information from these resources.
Frequently asked questions from parents

1. **What makes a child more likely to develop asthma?**
   Asthma affects about 10-12% of children under 18 years of age, but anyone can develop asthma at any time. At this time, the risk factors that make a child more likely to develop asthma include:
   - Family history of asthma and/or allergies
   - Presence of allergies and/or eczema
   - Exposure to tobacco smoke before and/or after birth

2. **Why are more children getting asthma?**
   No one really knows why more and more children are being diagnosed with asthma. Some experts wonder if it is because children are being exposed to more triggers. Children may breathe in more smoke or come in contact with things they are allergic to like dust, animal dander and pollen. Others wonder if in our 21st-century lifestyle, our immune system may not be challenged enough. Previous generations were exposed daily to many more normal illnesses and harsh living conditions. Or possibly, asthma is better recognized now in children. As you can see, there is no agreement on this, but research is continuing.

3. **Can asthma be cured?**
   No, at this time there is no cure for asthma. But there are many ways to control asthma so your child can live a normal, active life.

4. **Will my child outgrow asthma?**
   Children who have allergies and/or eczema in addition to asthma symptoms usually continue to have asthma throughout life. Many times their symptoms lessen as they grow older. If your child has wheezing outside of colds, they are more likely to have asthma as an adult. Once a person’s airways become hypersensitive (as in asthma), they tend to remain that way. This is likely because your genes determine how your airways react to triggers.
   By adolescence, more than 50% of children have a decrease in asthma symptoms, appearing to have “outgrown” their asthma. About 10% of these children will develop asthma again in adulthood. At this time, we cannot predict which children will lose their symptoms in adolescence and who will have them return in later life. Half of all children with chronic severe asthma will continue to have these persistent symptoms as an adult.

5. **Will my child become dependent or addicted to inhalers if taken regularly?**
   No, your child will not become addicted, or dependent, nor will their lungs become weaker from taking the prescribed asthma medicines. Your child may need these medicines for breathing, not because they are addicted, but because they have airways that are swollen and tight. The lung tubes must be kept opened with these medicines, or air and oxygen cannot reach the rest of the body.

6. **Should I stop the asthma medicines if my child’s symptoms improve or go away?**
   No, many times asthma symptoms improve because the medicines are working as they should. Sometimes children can decrease or change their medicines in different seasons or as they get older. Before doing this, talk with your healthcare provider who is helping you care for your child’s asthma.
7. **Should my child use a nebulizer or an inhaler?**

   It does not make any difference. Either method will work well to get the medicine into the lungs, when used correctly. But, to get the most benefit, you must always have your child use a spacer with an inhaler or a mask with a nebulizer.

8. **What if my child forgets to take their asthma medicine?**

   Depending on what kind of asthma medicine was forgotten, the effect will be different.

   **Controller medicines**, also called preventative or maintenance medicines, work over time to reduce airway inflammation or swelling. By inhaling a small dose daily, this protection slowly builds over weeks to months. If you forget a dose every once in awhile, it should not have much effect. If you stop for several days to weeks, your child's lungs will slowly get more irritated and sensitive, putting your child at increased risk for an asthma attack.

   Forgetting a **rescue medicine** may lead to immediate symptoms. These are fast-acting and relax the tight muscles around the breathing tubes. They are quite short-acting, providing relief for only about 4 hours. They are not meant to be used or needed on a daily basis, unless for exercise. If they are needed more than a couple of times a week (outside of exercise), talk to your healthcare provider, as this indicates poor asthma control.

9. **Is it safe to travel with my asthmatic child?**

   Your child's asthma should not prevent you from planning a family vacation, sending your child to a friend or relatives for a visit, or letting your child attend summer camp if you prepare carefully ahead of time.

   Make sure your child's asthma is under good control before they go. See your healthcare provider to see if a change in medicine is needed. Make sure you pack a supply of all rescue and controller medicines and the equipment needed to use them. If your child uses a peak flow meter, make sure to pack that, too. Make copies of an up-to-date asthma management plan and current phone numbers to call if needed. Just like at home, make sure that the person supervising your child is familiar with their symptoms, warning signs, medicines and emergency care written up in the Asthma Management Plan. Be sure to let your child know that you have spoken to the adults who will be caring for them so they know what to do if their asthma flares – but that it is their responsibility to know who to talk to and what to do, too!

10. **Can my child die from asthma?**

    Although rare in children, it is possible to die from asthma. Take your child's early and late warning signs very seriously. You can work with your child and healthcare provider to prevent life-threatening situations by following your Asthma Management Plan. You will want to work at avoiding or eliminating triggers in every environment your child spends time in. Take all prescribed medicines as directed, monitor asthma symptoms and treat them right away.
Glossary

**Acute**: Sudden

**Allergen**: A substance (such as a food or pollen) that your body perceives as dangerous and that can cause an allergic reaction

**Allergy**: An exaggerated response to a substance or condition produced by the release of histamine or histamine-like substances in affected cells

**Alveoli**: Small, thin-walled sacs located at the end of the smallest airways in the lungs. The exchange of oxygen and carbon dioxide takes place in the alveoli.

**Anticholinergics**: A medicine that opens the airways by relaxing the muscle bands that tighten around the airways. Anticholinergics do not provide immediate relief, but can be used to help quick relief medicines during an asthma episode.

**Antihistamine**: Medicine that stops the action of histamine, which causes symptoms of allergy such as sneezing, itching and swelling

**Anti-inflammatory**: Medicine that reduces inflammation (swelling in the airway and mucus production)

**Asthma**: A disease of the airways or branches of the lung (bronchial tubes) that carry air in and out of the lungs. Asthma causes the airways to narrow, the lining of the airways to swell, and the cells that line the airways to produce more mucus. These changes make breathing difficult and cause a feeling of not getting enough air into the lungs. Common symptoms include cough, shortness of breath, wheezing, chest tightness, and excess mucus production.

**Breathing rate**: The number of breaths per minute

**Bronchodilator**: A medicine that opens the airways by relaxing the muscle bands that tighten around the airways. Bronchodilators also help clear mucus from the lungs.

**Bronchospasm**: The tightening of the muscle bands that surround the airways, causing the airways to narrow

**Carbon dioxide**: A colorless, odorless gas that is formed in the tissues and is delivered to the lungs to be exhaled

**Chronic disease**: A disease that can be controlled but not cured

**Cilia**: Hair-like structures that line the airways in the lungs and help to clean out the airways
**Clinical trials**: Research programs conducted with patients to evaluate a new medical treatment, drug, or device. The purpose of clinical trials is to find new and improved methods of treating different diseases and special conditions.

**Contraindication**: A reason not to use a course of treatment or a medicine

**Dander, animal**: Tiny scales shed from animal skin or hair. Dander floats in the air, settles on surfaces, and is a major part of household dust. Cat dander is a classic cause of allergic reactions.

**Decongestant**: Medicine that shrinks swollen nasal tissues to relieve symptoms of nasal swelling, congestion, and mucus secretion

**Diaphragm**: The major muscle of breathing, located at the base of the lungs

**Dry powder inhaler (DPI)**: A device for inhaling respiratory medicines that come in powder form

**Dust mites**: Tiny insects, unable to be seen without a microscope, that are present in carpet, stuffed animals, upholstered furniture, and bedding including pillows, mattresses, quilts, and other bed covers. Dust mites are one of the most common allergens and, therefore, a common asthma trigger. They grow best in areas with high humidity.

**Dyspnea**: Shortness of breath

**Exacerbation**: Worsening

**Exercise-induced asthma**: Asthma that is made worse when exercising

**Exhalation**: Breathing air out of the lungs

**Gastroesophageal reflux (acid reflux)**: A disease that causes heartburn when acid from the stomach flows up into the throat. Acid reflux can trigger asthma and make it harder to treat.

**High-efficiency particulate filter (HEPA)**: A filter that removes particles in the air by forcing it through screens containing microscopic pores

**Histamine**: A naturally occurring substance in the body that causes allergic reactions (redness, itching, and swelling) of the nose and eyes. This reaction can also occur in the lung, causing the airways to narrow.
Glossary, continued

**Holding chamber**: See “spacer.”

**Immune system**: The body’s defense system that protects against infections and foreign substances.

**Inflammation**: A response in the body that includes swelling and redness.

**Inhaler**: See “metered dose inhaler (MDI)” or “dry powder inhaler (DPI).”

**Inhalation**: Breathing air into the lungs.

**Leukotriene modifier**: Medicine that blocks chemicals called leukotrienes in the airways. Leukotrienes occur naturally in the body, and cause tightening of airway muscles, and production of excess mucus and fluid.

**Long-term control medicine**: A medicine that must be taken every day to control asthma symptoms; not used for quick relief.

**Medical history**: A list of a person’s previous illnesses, present conditions, symptoms, medicines, and health risk factors.

**Metered dose inhaler (MDI)**: A small aerosol canister in a plastic container that releases a mist of medicine when pressed down from the top. This medicine can be breathed into the airway. Many asthma medicines are taken using an MDI.

**Mold**: A fungus. Molds are plants that make spores instead of seeds; these spores float in the air and are a common trigger for allergies. Molds are found in damp areas, such as the basement or bathroom, as well as in the outdoor environment in grass, leaf piles, hay, and mulch.

**Nebulizer**: A machine that changes liquid medicine into fine droplets (in aerosol or mist form) that are inhaled through a mouthpiece or mask. Nebulizers can be used to deliver bronchodilator (airway-opening) medicines such as albuterol, as well as anti-inflammatory medicines (Pulmicort Respules*). A nebulizer might be used instead of a metered dose inhaler (MDI). It is powered by a compressed air machine and plugs into an electrical outlet.

**Peak expiratory flow rate (PEFR)**: A test used to measure how fast air can be exhaled from the lungs.
**Peak flow meter:** A small hand-held device that measures how fast air comes out of the lungs when a person exhales forcefully — This measurement is called a peak expiratory flow (PEF), or simply peak flow (PF), and is measured in liters per minute (lpm). A person's PEF might drop hours or even days before asthma symptoms are noticeable. Readings from the meter can help the patient recognize early changes that might be signs of worsening asthma. A peak flow meter can also help the patient learn what triggers his or her symptoms and understand what symptoms indicate that emergency care is needed. Peak flow readings also help the healthcare provider decide when to stop or add medicines.

**Puffer:** Another term for inhaler or metered dose inhaler

**Pulmonary function tests (PFTs):** A test or series of tests that measure many aspects of lung function and capacity; also referred to as lung function tests.

**Quick-relief medicine (also called rescue medicine):** A medicine that opens the airways right away to relieve symptoms of asthma. Quick-relief medicines are usually used only when symptoms occur.

**Spacer:** A chamber that is used with a metered dose inhaler to help the medicine get into the airways better. Spacers also make metered dose inhalers easier to use. Spacers are sometimes called “holding chambers.”

**Spirometry:** A basic lung function test that measures how fast and how much air can be breathed out of the lungs

**Steroid (also called corticosteroid):** Medicine that reduces swelling and inflammation; it comes in pill and inhaled forms

**Triggers:** Things that cause asthma symptoms to start or become worse

**Wheezing:** The high-pitched whistling sound of air moving through narrowed airways

Excerpted from Asthma Glossary
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Free Interpreter Services

- In the hospital, ask your child's nurse.

- From outside the hospital, call the toll-free Family Interpreting Line 1-866-583-1527. Tell the interpreter the name or extension you need.