Allergic Rhinitis Guide

Allergy and Immunology Awareness Program (AIAP)

Prepared by:

Dr. Mehdi Adeli, MD, FAAAAI, FAP
Senior Consultant, Allergy and Immunology
Assistant Professor Weill Cornell Medicine-Qatar
Allergy and Immunology Awareness Program (AIAP)
Pediatrics Department, Hamad Medical Corporation
Doha, Qatar
Allergic Rhinitis Guide

Allergy and Immunology Awareness Program (AIAP)

Prepared by:

Dr. Mehdi Adeli, MD, FAAAAI, FAP
Senior Consultant, Allergy and Immunology
Assistant Professor Weill Cornell Medicine-Qatar
Allergy and Immunology Awareness Program (AIAP)
Pediatrics Department, Hamad Medical Corporation
Doha, Qatar
Introduction

This booklet was created by the Allergy and Immunology Awareness Program at Hamad Medical Corporation.

Allergic Rhinitis is a condition that affects many, young and old alike. The discomfort associated with the symptoms of allergic rhinitis can be troublesome to many and is behind a significant number of sick days taken by students and employees. This can result in a drop in productivity and cause an economic burden on the state.

The increased number of missed school days can accumulate into an educational deficit for children suffering from allergic rhinitis.

This booklet and this program as a whole, was created to show patients and their families that these conditions are manageable. We hope to lighten the burden on all those affected through education and empowerment.

We wish you the best of health.

Your feedback is highly valued. Please reach out to us at:

madeli@hamad.qa or AIAP@hamad.qa

Thank you and we wish you a healthy life.
Contents

The nose ........................................................................................................... 6
Allergic rhinitis ................................................................................................. 7
How common is allergic rhinitis ..................................................................... 7
What are allergens? ......................................................................................... 8
How does allergic rhinitis happen? ................................................................. 9
Conditions can be associated or complicated with Allergic Rhinitis .......... 9
Conditions that can be easily mistaken with Allergic Rhinitis: “Non-Allergic Rhinitis” 10
Diagnosing allergic rhinitis ........................................................................... 11
Management of allergic rhinitis ...................................................................... 11
  • Prevention
  • Medication
    ◦ Antihistamines
    ◦ Decongestants
    ◦ Corticosteroids
    ◦ Leukotriene Modifiers
    ◦ Mast cell stabilizers
    ◦ Allergy Shot (Immunotherapy)
  • Indications of using medication in relation to symptoms
  • Nasal irrigation (rinse)
  • How to use nasal sprays
When the referral to an immunology/allergy specialist is recommended? ........ 15
Frequent asked questions (FAQs) .................................................................. 16
Patient Education Checklist ........................................................................... 17
Epilogue ............................................................................................................ 17
References ....................................................................................................... 18
The nose is an organ of upper respiratory tract and has several Functions. First, it is the organ of smelling sensation as it has tiny neuron cells that can detect different kinds of smells. Also, it has a protective function; it produces mucus to prevent harmful things such as dust and bacteria from entering our bodies. Furthermore, the nose warms and filters the air we breathe before it reaches to the lungs.

The nasal passages are connected to the facial sinuses, which are cavities in the skull bones lined with mucus membrane located behind and beside the nose, cheeks, and eye sockets. They decrease weight of the skull and regulate voice resonance. In addition, they secrete mucus to lubricate the nasal passage and to trap germs and toxins.

In the throat, there is the pharynx which is muscular tube located behind the nose and mouth. It is responsible of swallowing. Also, it connects the nasal and oral cavity to the larynx, trachea (windpipe) and to the esophagus respectively.

Each Ear has three parts; outer, middle and inner. The nasopharynx and nose is connected to the ear through Eustachian (Auditory) tube which lies in the middle ear. This tube is smaller, softer and horizontal in babies compared to adults as their tubes are longer and vertical. For this reason, children are more vulnerable to infections and inflammation in their ears.

In conclusion, Ears, nose, throat and sinuses are all linked together. For that reason, diseases affect the nose can also have an impact on the surrounding structures.
Allergic Rhinitis

It is chronic inflammation of nasal passage that happens after being exposed to an allergen(s) and it causes many annoying symptoms.

Children usually are unaware of the symptoms and parents often do not consider it as allergic rhinitis. Thus, child may suffer without receiving adequate therapy.

The symptoms could be mild; do not interfere with patient’s daily activities, moderate or severe; in a way that affect the quality of the life.

Allergic Rhinitis occurs according to allergen exposure. Sometimes the symptoms can come and go with seasons “Seasonal Allergic Rhinitis” and sometimes they can last for the whole year “Perennial Allergic Rhinitis”.

How common is Allergic Rhinitis?

Around 1-15% of 6-7 year olds around the world have signs of allergic rhinitis. Around 2-40% of 13-14 year olds also have these signs. Allergic rhinitis is found in about 16% of adults. Adults are probably more likely to have the persistent kind.

Anyone can get Allergic Rhinitis at any age. Usually people get it in childhood or early adulthood. It can get better or worse from year to year but usually ends up getting better slowly, and over many years.

The symptoms are:

- A runny nose with stuffiness
- Excessive tearing or itchy eyes
- Sneezing
- Itchy nose, or throat
- Feeling pressure behind the nose or on either side of it (where the sinuses are)
- Swollen and dark skin under the eyes (called “allergic shiners”)
They are regular things around us (airborne substances) that do not cause allergic symptoms normally. However, if people are susceptible to allergy, their bodies will overreact when they get exposed to the allergen. They are classified to indoor and outdoor allergens.

**Indoor Allergens:**
We usually find them inside the house. They include:

**Dust mites:** Dust mites are insects, not able to be seen with the naked eye, that survive in bedding, carpets, stuffed furniture, old clothing and stuffed toys. They survive primarily on human dander. Dust mites are common in humid climates.

**Mold spores:** Is part of a fungus. They can be found in a lot of homes. Mold chooses to grow in humid places like bathrooms or kitchens.

**Cockroach’s particles:** Cockroaches can live in small cracks in houses without ever being seen. You are more likely to find them in the kitchen where food is exposed.

**Animal dander and Feathers:** means the bits of dead skin or hairs that naturally fall off any animal.
Outdoors Allergens:
They present in the outside. The commonest one is Pollen from trees, shrubs, grasses and weeds. Pollen may travel many miles. Therefore trees, grasses and weeds in your general area can cause allergy symptoms.

How does Allergic Rhinitis happen?
A person is more likely to get allergic rhinitis if his parent has it too. This is also true if the parents or any family member have other allergies like skin allergies, asthma or even food allergies. These diseases tend to run in families.

Everybody’s defense system is in charge of checking the things that come into contact with it. It labels normal things as safe and harmful things (like viruses), as unsafe.

Then, the immune system will make antibodies (IgE as an example) as well as chemical substances - act as inflammatory mediators- such as "Histamine" to attack the harmful things specifically.

Sometimes, the defense system will make a mistake by attack a safe substance like tree pollen through those antibodies and mediators. This is what gives a person allergic rhinitis and other allergic reactions.

Conditions or complications associated with Allergic Rhinitis:
Many complications and diseases could be associated with allergic rhinitis. The paragraph below mentions some of them.

- Complications affect the daily performance and quality of life such as sleep disturbance, daytime tiredness, headaches, poor concentration
- Bronchial asthma: is a chronic respiratory illness, affecting the airways, making the breathing difficult. It occurs mainly due to inflammation and swelling of the airways plus secretion of mucus which cause obstruction and promote further breathing difficulty. The presence of allergic rhinitis (seasonal or perennial) significantly increases the probability of asthma as up to 40% of people with allergic rhinitis have or will have asthma.
- Otitis Media: Inflammation of the middle ear usually due to dysfunction of Eustachian (Auditory) tube. It commonly happens as a result of viral or bacterial infection. As mentioned before, children have higher tendency to develop otitis media because their auditory tubes are small, soft and horizontal. This make the infection spread easily from the adjacent structures like nose or throat.

Excessive Tearing
• **Anatomic Rhinitis:** Any anatomic abnormality of the nose can affect its functions and cause inflammation as well. For example, nasal septal deviation.

• **Atrophic Rhinitis:** (shrunken nasal tissue) due to thinning of nasal mucosa which is caused by different reasons like prolonged infection and aging. The patient will notice crusts in his nose, widening of nasal cavity as well as loss of smelling.

• **Drug induced Rhinitis:** There are many medications cause congestion of the nose. For instance, topical decongestant (if you used them for a long time), Oral contraceptives and some Anti-hypertensive medication.

• **Rhino-sinusitis:** Inflammation of the sinuses. Same as ears, the sinuses are also connected with the nose, so they could be affected with nose diseases.

• **Nasal polyps:** they are benign, fleshy swelling grows from the mucous membrane of the sinuses or nose. They cause a profound feeling of nasal blockage.

• **Allergic conjunctivitis:** inflammation of the conjunctiva that occurs because of allergy.

• **Atopic Dermatitis:** Allergy causes skin rash.

• **Rhino-sinusitis:** Inflammation of the sinuses. Same as ears, the sinuses are also connected with the nose, so they could be affected with nose diseases.

• **Nasal polyps:** they are benign, fleshy swelling grows from the mucous membrane of the sinuses or nose. They cause a profound feeling of nasal blockage.

• **Allergic conjunctivitis:** inflammation of the conjunctiva that occurs because of allergy.

• **Atopic Dermatitis:** Allergy causes skin rash.

**Conditions that can be easily mistaken with Allergic Rhinitis: “Non-Allergic Rhinitis”**

Many conditions can lead to rhinitis symptoms. Some people may think of them as results of allergy although they are not.

• **Infectious Rhinitis:** (cold and flu) usually caused by viruses and can be complicated with bacterial infection. Its treatment is completely different despite sharing most of the symptoms with allergic rhinitis.

• **Hormonal Rhinitis:** This is associated with hormonal status changes such as pregnancy, puberty and menses.

• **Non-Allergic Rhinitis with Eosinophilia Syndrome (NARES):** This is a syndrome characterized by: Asthma, nasal polyps and Aspirin insensitivity.

• **Vasomotor or idiopathic Rhinitis:** This is believed to result from disturbed regulation of the autonomic nervous system (which controls the body functions without our consciousness such as breathing and heart beating). This disturbance causes the blood vessels that supply the nose to expand resulting in congestion and draining of mucus. The exact reason of idiopathic rhinitis is unknown! However, it is triggered by nonspecific factors such as chemical irritants, environmental changes, humidity and strong smells.
Diagnosing Allergic Rhinitis

It is very difficult to diagnose allergic rhinitis in the first 2 or 3 years of life. The prevalence of allergic rhinitis peaks in the second to fourth decades of life and then gradually diminishes.

Initially, your doctor will ask questions to find out when and where you get the symptoms (e.g., during a particular season, after exposure to a dog or cat, etc.). Are the symptoms associated with other infections or skin rash? Also, he will check if you had been taking specific medication which may cause these symptoms. Does anyone in the family have allergy?

Next, the doctor will examine the nose as well as ears, throat, eyes, lungs and skin.

After that, he might ask for blood or skin tests specific for allergy to confirm the diagnosis. And he may request radiographic imaging if rhino-sinusitis is suspected.

Allergy tests should be done by an allergy/immunology specialist.

Management

If the allergy toward a specific allergen is confirmed, the best management is to avoid it.

Prevention:

Dust mites
- Surround the mattress and box springs in a zippered dust-proof enhancing. Dust-proof enhancing has a layer of material that keeps the dust mites inside and won’t allow it to get out.
- Wash all bedding in a hot water (around 50 C) weekly.
- Keep the indoor humidity below 50%. Air conditioners are used in Arabic area for that purpose.
- Use exhaust fan in the bathroom and kitchen or open a window to get rid of humidity.
- Keep stuffed toys out of the bedroom or wash them weekly in hot water.
- Don’t use a humidifier or evaporate (swamp cooler). It raises the humidity level in the home creating a perfect setting for house dust mites and mold growth.

Cockroaches
- Keep food out of the bedroom.
- Keep food and garbage in closed containers.
- Discard spoiled food immediately. Empty the garbage daily.
- Use poison baits, boric acid or traps to control cockroaches, and keep these out of children reach.

Indoors mold
- Use exhaust fan in the bathroom and kitchen or open a window to get rid of humidity.
- Wipe down surfaces following showering. Clean bathrooms with mold preventing or mold killing solution.
- Use an exhaust fan in the kitchen to remove steam vapor when cooking.
- Throw away spoiled food.
- Empty the trash on a daily basis.
- Keep indoor humidity low. The ideal humidity level is 30–40 %
- Air conditioning can help decrease humidity.

Animal dander
- Remove pets from your home environment.
- If a pet is a must, keep it away of the allergic person’s bedroom at all times. Ensure the child’s bedroom door closed and put a filter over air vents in the bed room.
- Keep the pet away from upholstered furniture and carpet as much as possible.
- Fish can be good pets.

Pollen or molds
- Wear a dust mask when going outside.
- Windows and outside doors should remain closed throughout pollen season, especially during the daytime.
Medication:
There are different kinds of medication used to control the symptoms. Your physician will prescribe the appropriate one according to the severity and duration of the attacks.

These Types are:

Anti-histamines:
They act by blocking the histamine receptors, so histamine would not be able to act in the body. They are mainly used to relieve sneezing and itching. They are formed as tablets and nasal sprays. Sprays appear to have some anti-inflammatory effect as well as can improve nasal congestion. They have rapid onset of action (less than 15 mints.) and can be administered on demand. However, they are not available in our area yet.

Anti-histamines are classified as:
- Oral 1st generation, they make you feel drowsy, “Sedating Anti-histamines” and could be used at night. Also, they may cause some dryness of mouth and eyes. Examples of them, diphenhydramine and chlorpheniramine
- Oral 2nd generation, they have less sedating effect compared to 1st generation. They are called “Non-sedating Anti-histamines”, such as loratadine and cetirizine.
- Oral 3rd generation, they are used to avoid cardiac effect of anti-histamines such as, Desloratadine and Levocetirizine.
- Examples of nasal sprays: Azelastine and olopatadine.

Decongestants:
They let your blood vessels contract, so inflammation will decrease. Be aware! You should use them for a maximum of five days otherwise they will worsen the nasal block. Moreover, adults with high blood pressure and pregnant ladies have to use them with precautions.

Some types are produced as combination with Anti-histamines to control symptoms more effectively.

Corticosteroids:
Intranasal glucocorticoids are generally the most effective therapy. They reduce swelling inside the airways and may also decrease mucus production. Some parents have concerns about using inhaled corticosteroids as they cause growth suppression in children. Studies do not support this theory and have shown no growth inhibition even if they had been taking for several years (appropriately). They must be used under physician consultation.

Common inhaled steroids include:
- Nasonex® (mometasone)
- Rhinocort® (budesonide)
- Flixonase (fluticonasone)

Leukotriene Modifiers
Some inflammatory cells produce chemical signals called “leukotrienes” which are inflammatory mediator as histamine. They lead to more tissue swelling. Leukotriene modifiers are long term control medications. They decrease congestion, but they are less effective than inhaled steroids.

Common leukotriene modifiers are:
- Singulair® (montelukast)
- Accolate® (zafirlukast)
- Zyflo® (zileuton/ not indicated for children under 12 years)

The addition of an antihistamine to montelukast does appear to have added benefits especially with severe seasonal allergic rhinitis.
Indications of using medication in relation to symptoms:

<table>
<thead>
<tr>
<th>Type of Symptoms</th>
<th>Recommended Treatment Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>Episodic symptoms</td>
<td>Oral or nasal antihistamine, with oral or nasal decongestant if needed</td>
</tr>
<tr>
<td>Mild symptoms, seasonal or perennial</td>
<td>Intranasal glucocorticoid, oral or nasal antihistamine, or leukotriene receptor antagonist (singular)</td>
</tr>
<tr>
<td>Moderate-to-severe symptoms</td>
<td>Intranasal glucocorticoid, intranasal glucocorticoid plus nasal antihistamine or immunotherapy</td>
</tr>
</tbody>
</table>


b. Intranasal glucocorticoids are more efficacious than oral antihistamines or singular, but the difference may not be as evident if the symptoms are mild.
c. Moderate-to-severe allergic rhinitis is defined by the presence of one or more of the following: sleep disturbance, impairment of usual activities or exercise, impairment of school or work performance, or troublesome symptoms.
d. This combination is more efficacious than an intranasal glucocorticoid alone.
e. Allergen immunotherapy should be used in patients who do not have adequate control with other or who prefer allergen immunotherapy.

Mast Cell Stabilizers: (Cromolyn Sodium and Nedocromil)

They control releasing of inflammatory mediators. When used regularly, cromolyn or nedocromil help avoid swelling in the airways. They are used to prevent the rhinitis symptoms. They are available in inhaled forms. Because cromolyn and nedocromil are preventive, they must be taken on a regular basis to be efficient.

Note: Inhaled corticosteroids, leukotriene modifiers and mast cell stabilizers are not suitable for quick relief. They may be slow to show beneficial effects and may require several weeks before any major improvement is seen.

Allergy Shots (Immunotherapy)

If actions to avoid exposure and medications are not effective, allergy shots can be considered.

This immunotherapy consists of a series of injections with solutions containing the allergens. The purpose is to decrease the sensitivity, which in turn reduces symptoms.

Treatment usually begins with shots of a weak solution given once or twice a weekly. Then, concentration is gradually rising until reaching the strongest dosage. After that, they will be given on a monthly basis.

Injections should be given in the health care center / hospital, where trained staff can manage any life threatening reactions.

Allergy shots have been shown to decrease symptoms associated with pollens, certain molds, dust mites and animal dander.

They do not produce a direct outcome. A period of six months to one year may be necessary prior the improvement is being seen. A normal path of treatment with these shots is three to five years. Although, some people may benefit from a longer course, not everyone responds well.
Nasal irrigation (rinse):

Nasal irrigation is rinsing nasal passages with large amount of saline solution (salt water). Several studies showed the effectiveness of this approach in relieving nasal congestion, rhinorrhea as well as sleep disturbance.

The aim of nasal rinsing is to clear the nasal mucosa and rids possible allergens and irritants out, thus reducing the nasal blockage.

Moreover, it has shown that sprays medications are more effective when patients did the nasal rinsing before using them.

Different kinds of devices, including syringes, pots, bottle sprayers and saline solution are available over the counter.

The instructions: (You should apply the irrigation on both nasal sides).

1. Fill the bottle with lukewarm sterilized, distilled, or previously boiled water.
2. You may add solute inside the bottle and then close it tightly.
3. Shake the contents gently to dissolve the mixture.
4. Bend over the sink and tilt your head down. Blow your nose and breathe from your mouth.
5. Squeeze bottle gently toward the back of your head (NOT the top of the head) until the solution starts draining from the opposite nasal passage.
6. Sniff gently to remove residual solution without pinching your nose.
7. Please, if some solution reached your throat, don’t swallow it. Spit it out.
8. Always be sure that the bottle is clean. We recommend changing it regularly.
9. Apply this irrigation one to two times per day.
10. Do the irrigation before using your nasal sprays medication to get better effect from medication.
When the referral to an immunology/allergy specialist is recommended?

- When the allergen is identified and you need skin tests to be sure.
- If you required many medications to control rhinitis symptoms.
- Repeated use of oral corticosteroids (more than 2 courses in a year).
- If the symptoms are severe or remain for a long time in a way that affect the quality of life and daily performance.
- If Allergic Rhinitis is associated with other conditions such as asthma, rhinosinusitis, ... etc.

How to use nasal sprays:

1. Blow your nose.
2. Shake the bottle.
3. Tilt your head slightly forward.
4. Using your right hand spray the medicine into your left nostril, aiming for the outer wall of the nostril.
5. Repeat the same for your right nostril using your left hand.
6. Spray as many times as prescribed.

The correct technique to use nasal spray

Photo provided by permission of: www.myhayfever.com.au
Common or severe adverse effects are as follows:

• For oral antihistamines: sedation and dry mouth (predominantly with 1st generation)
• For nasal antihistamines: bitter taste, sedation, and nasal irritation.
• For oral decongestants: rapid or irregular heartbeats, trouble sleeping, jitteriness or irritability and dry mouth.
• For nasal decongestants: rebound nasal congestion (if used for long time) and the potential for severe central nervous system and cardiac side effects in small children.
• For leukotriene-receptor antagonists: bad dreams and irritability.
• For nasal glucocorticoids: nasal irritation, nosebleeds, and sore throat.

5. Are the "steroids" in nasal sprays safe?
Using steroids as recommended by physician is generally safe. There have been concerns about steroid medication (oral or sprays) may cause decrease formation of normal steroid in the body (cortisol) when given for a long time (more than 2 weeks). However, this could be managed if steroid is stopped by decreasing doses gradually.
Also, some parents have concerns about using corticosteroid sprays as they cause growth suppression in children. Studies do not support this theory and have shown no growth inhibition even if they had been taking for several years.

6. What is the difference between the nasal medications and oral medications?
Nasal medications (nose sprays) act locally in the nose, so they are used mainly to relieve nasal symptoms such as nasal congestion, runny nose, and swelling. Their side effects are also local. For instance, nasal bleeding or rebound congestion. But oral medications are taken through the mouth, ingested, and absorbed to the blood to act systemically throughout the body and they lessen all allergic manifestations including eye
symptoms. For that reason, their side effects are usually systemic such as headache and constipation.

7. How quickly can I expect to get relief from my allergy treatment?
Each medication is different. Inhaled corticosteroids and leukotriene modifiers may be slow to show beneficial effects and require several weeks before any major improvement is seen, usually it takes 1 to 2 weeks after starting medication. However, some medications, such as oral antihistamines, start to work within a few hours, some within 20 minutes.

8. I have asthma and I am using corticosteroid inhalers to control my symptoms. Can I also take allergy medications containing corticosteroids?
Yes you can use inhaled corticosteroid for asthma and sprays for allergic rhinitis, but consult your doctor, he may suggest another option to treat the allergic rhinitis or reduce medication to the lowest effective dose. Thus, you won’t take too much corticosteroid.

9. What are types of allergy tests?
Allergy tests may help find the allergen that causes allergy. They are usually skin or blood tests. However, allergy tests alone are generally not enough. It is important to have a doctor’s exam and medical history first to help diagnose allergies. If the exam and medical history point to allergies, allergy tests may be helping.

Types of Allergy tests are:
- IgE Skin Tests: This type of testing is the most common.
- Skin injection test (Intradermal tests)
- Blood Tests (Specific IgE in the blood)

(For further information regarding skin testing please review “Allergy and Related Testing” booklet. It clarifies each test in details).

Patient Education Checklist
- I have received allergic rhinitis education.
- I have a clear explanation of Allergic Rhinitis diagnosis.
- I know how to avoid triggers.
- I have reviewed the medicines and know how and when they are taken.
- I understand how to use nasal sprays.
- I know when to seek advice from an allergy/immunology specialist
- I understand what to do if I had episodic symptoms of Allergic rhinitis
- I understand what to do if I had mild symptoms.
- I understand what to do if I had moderate to severe symptoms.

Epilogue
We would like to thank you for giving us the opportunity to serve you.

We hope, through this booklet we have accomplished the goal of increasing your awareness about Allergic Rhinitis.

In our endeavor to improve our services, we would really appreciate to hear your feedback and opinion.

We look forward to your continuous support and cooperation in achieving our goal which is helping you live a healthy life.

For any questions or suggestions, please contact us on email: madeli@hamad.qa or AIAP@hamad.qa

Dr. Mehdi Adeli, MD, FAAAAI, FAP
Senior Consultant, Allergy and Immunology
Assistant Professor, Weill Cornell Medicine-Qatar
Allergy and Immunology Awareness Program (AIAP) Pediatrics Department, Hamad Medical Corporation Doha, Qatar
References


