

**On behalf of Vision Expo, we sincerely thank you for being with us this year.**

---

## **Vision Expo Has Gone Green!**

We have eliminated all paper session evaluation forms. Please be sure to complete your electronic session evaluations online when you login to request your CE Letter for each course you attended! Your feedback is important to us as our Education Planning Committee considers content and speakers for future meetings to provide you with the best education possible.



# disclosures

last 12 months

allergan/abbvie  
sun pharma  
tarsus pharma  
Ocuphire  
Bruder  
Scope

last 12 months

sydnexis  
eyenovia bio  
laboratoires Thea  
visus/tenpoint  
therapeutics  
Harrow

last 12 months


aperta biosciences  
astareal, inc.  
azura ophthalmics  
aldeyra therapeutics  
Vyluma  
Lenz

“All relevant relationships have been mitigated.”



# The OTC Allergy Equation: Timing, Treatment, and Tailored Care





# The OTC Allergy Equation: Timing, Treatment, and Tailored Care

Milton M. Hom, OD, FAAO, FACAAI (Sc)  
[eyemage@mminternet.com](mailto:eyemage@mminternet.com)



# The OTC Allergy Equation: Timing, Treatment, and Tailored Care

One airway philosophy

Cases

Antihistamines, Asthma,  
Allergic conjunctivitis

Allergic rhinitis, Allergic cough,  
Allergic hives

# Truth or Tale?

Allergic conjunctivitis  
is an eye disease



It's not just the eye—  
it's the body.

allergic conjunctivitis =  
systemic allergy

# One airway One disease

Grossman J. One airway, one disease. Chest. 1997 Feb;111(2 Suppl):11S-16S.  
doi: 10.1378/chest.111.2\_supplement.11s. PMID: 9042022.



One airway philosophy:  
“The upper and lower airways  
are a single organ that work  
together”

Grossman J. One airway, one disease. Chest. 1997 Feb;111(2 Suppl):11S-16S.  
doi: 10.1378/chest.111.2\_supplement.11s. PMID: 9042022



**Ocular**

Allergic Conjunctivitis

**Nose**

Allergic Rhinitis

**Throat**

Allergic Cough

**Lungs**

Asthma

**Skin**

Atopic  
Dermatitis

Urticaria  
Hives



# OTC Toolbox

## Ocular

Topical  
anti-histamines

cyclosporine

Loteprednol

PF Artificial  
tears

## Throat

Cough  
suppressants

Nin Jiom

## Nose

Sprays

Saline rinses

## Lungs

Prescribed  
Inhalers

Primatene mist  
emergency use

## Skin

Topical anti-histamines &  
steroids

Lubrication

Oral anti-histamines &  
Pepcid

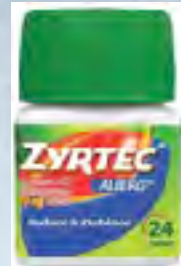
## Systemic

Oral  
anti-histamines



# OTC Toolbox

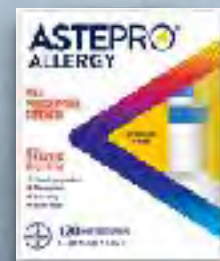
## Oral anti-histamines



## Topical anti-histamines



## Sprays



## Saline rinses

## Lubrication





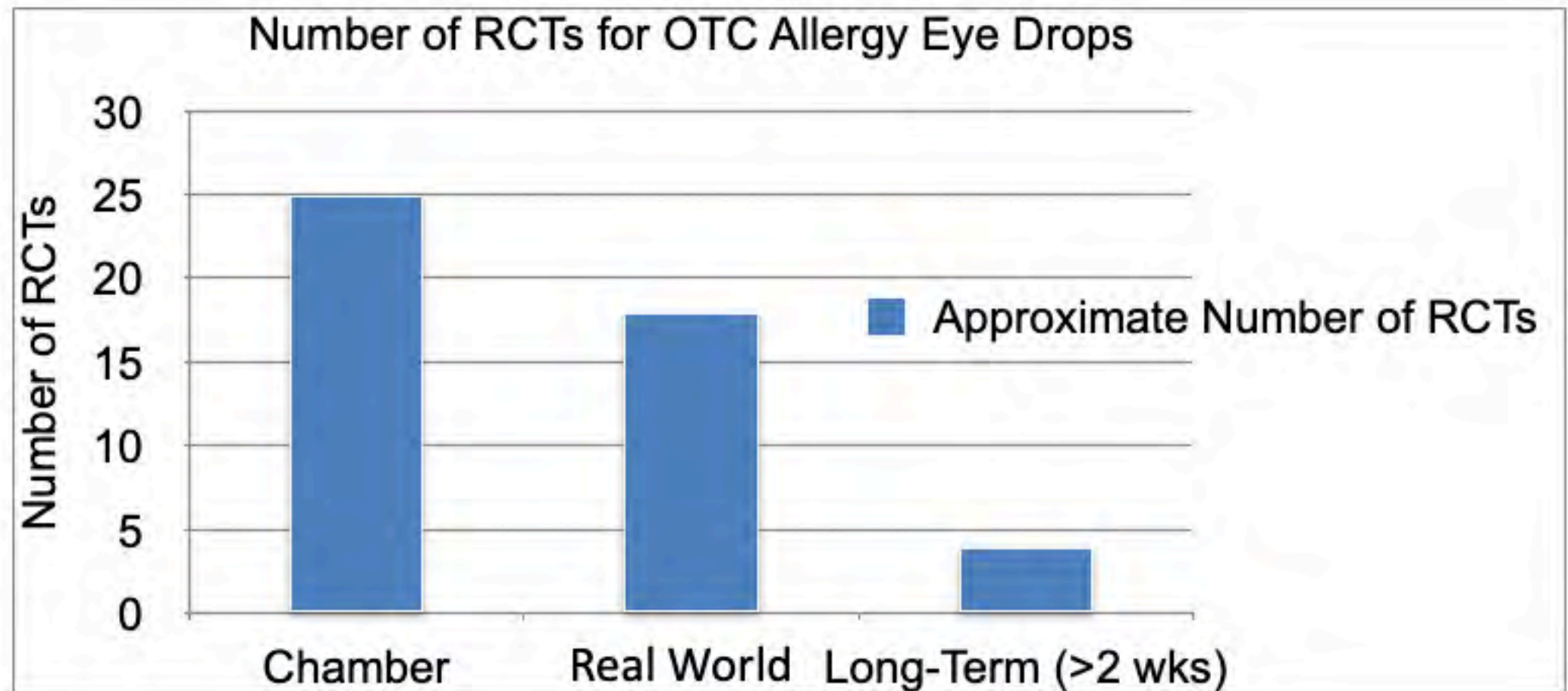
# Allergic conjunctivitis drops

Data Gap:

Most studies are chamber studies (1-2 days)

Very few are real world and over 2 weeks


# Allergic conjunctivitis drops






# Case Vignette: The Sniffing Accountant

# Case Summary

-  Jason, 39-year-old CPA with persistent nasal congestion.
  - **Symptoms:** "Can't breathe through my nose at night—wakes me up." Morning stuffiness, post-nasal drip
- - **Current OTC:** Loratadine daily
  - **Triggers:** Office pollen, scented candles, window open at night



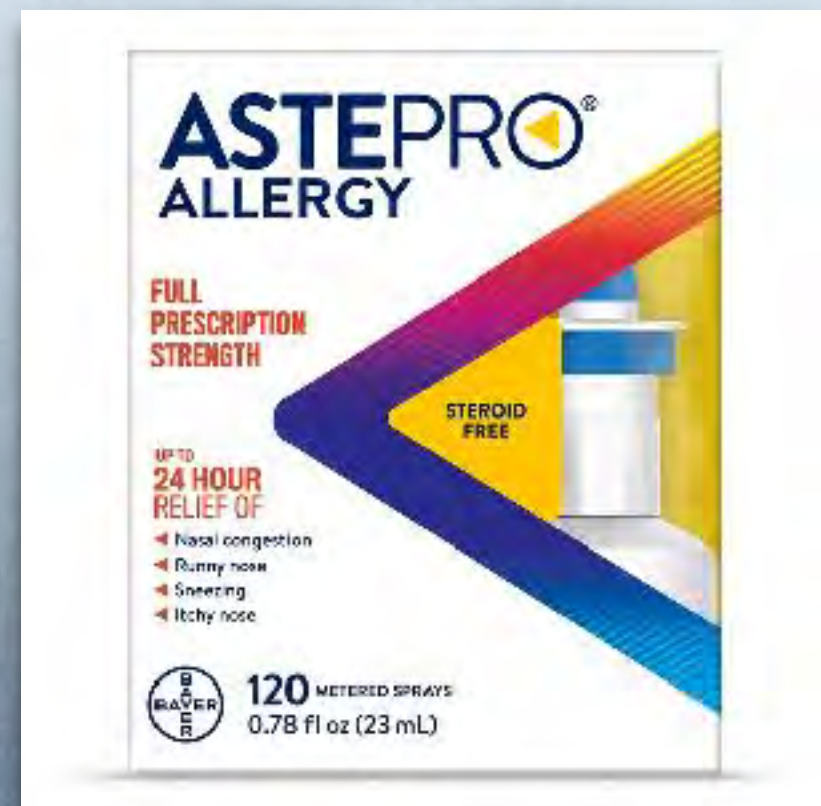
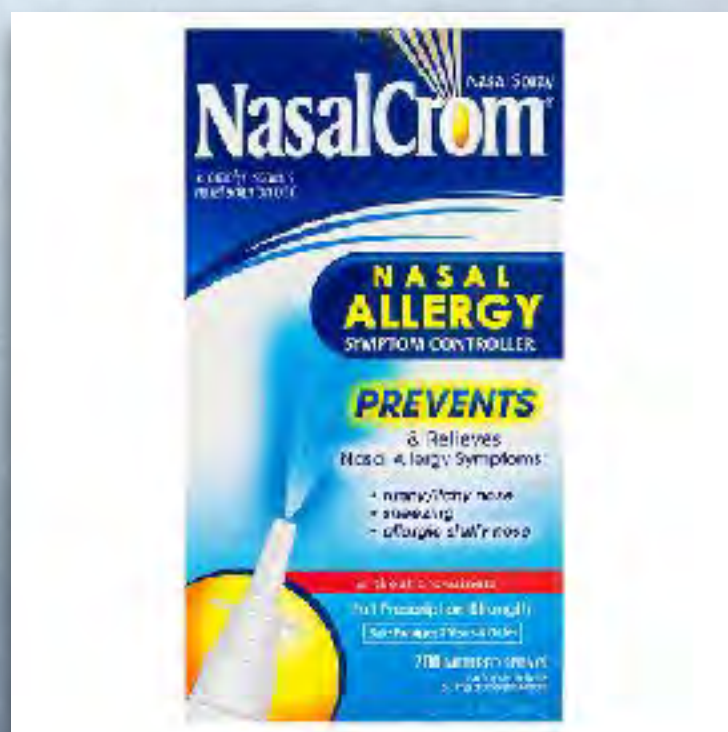
# Case Summary

-  Jason, 39-year-old CPA with persistent nasal congestion.
  - Symptoms: "Can't breathe through my nose at night—wakes me up." Morning stuffiness, post-nasal drip
- - Current OTC: Loratadine daily
  - Triggers: Office pollen, scented candles, window open at night

# Allergic rhinitis



# Sprays







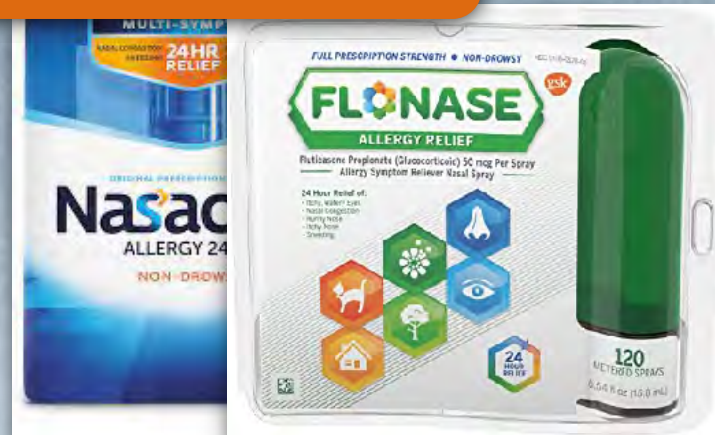
## Cromolyn 1965 Opti-Crom

Inventor: Dr. Roger Altounyan  
8 years 500 compounds  
1000 asthma attacks

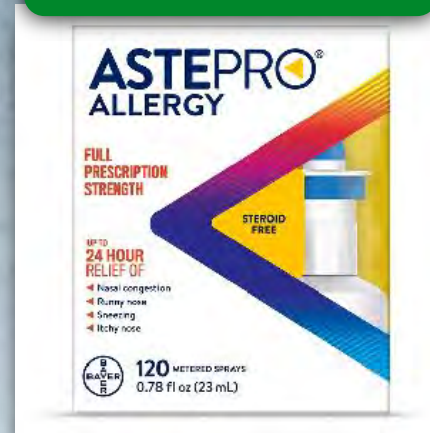




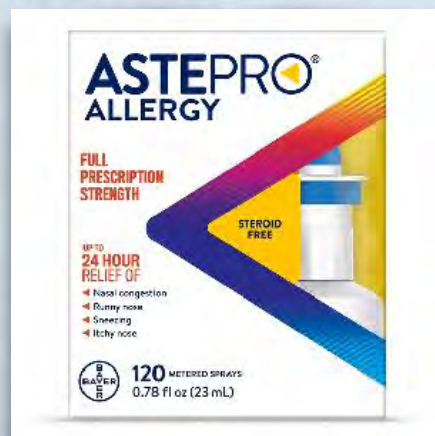
Allergist



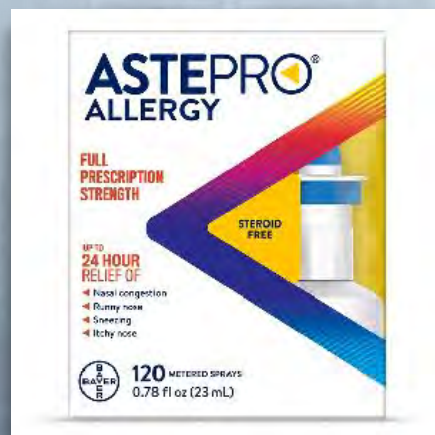
Add



Add



Add



Add







**Ocular**

Allergic Conjunctivitis

**Nose**

Allergic Rhinitis

**Throat**

Allergic Cough

**Lungs**

Asthma

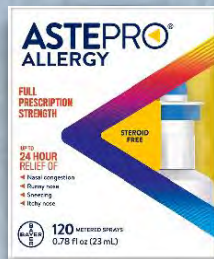
**Skin**

Atopic  
Dermatitis

Urticaria  
Hives



## Sprays

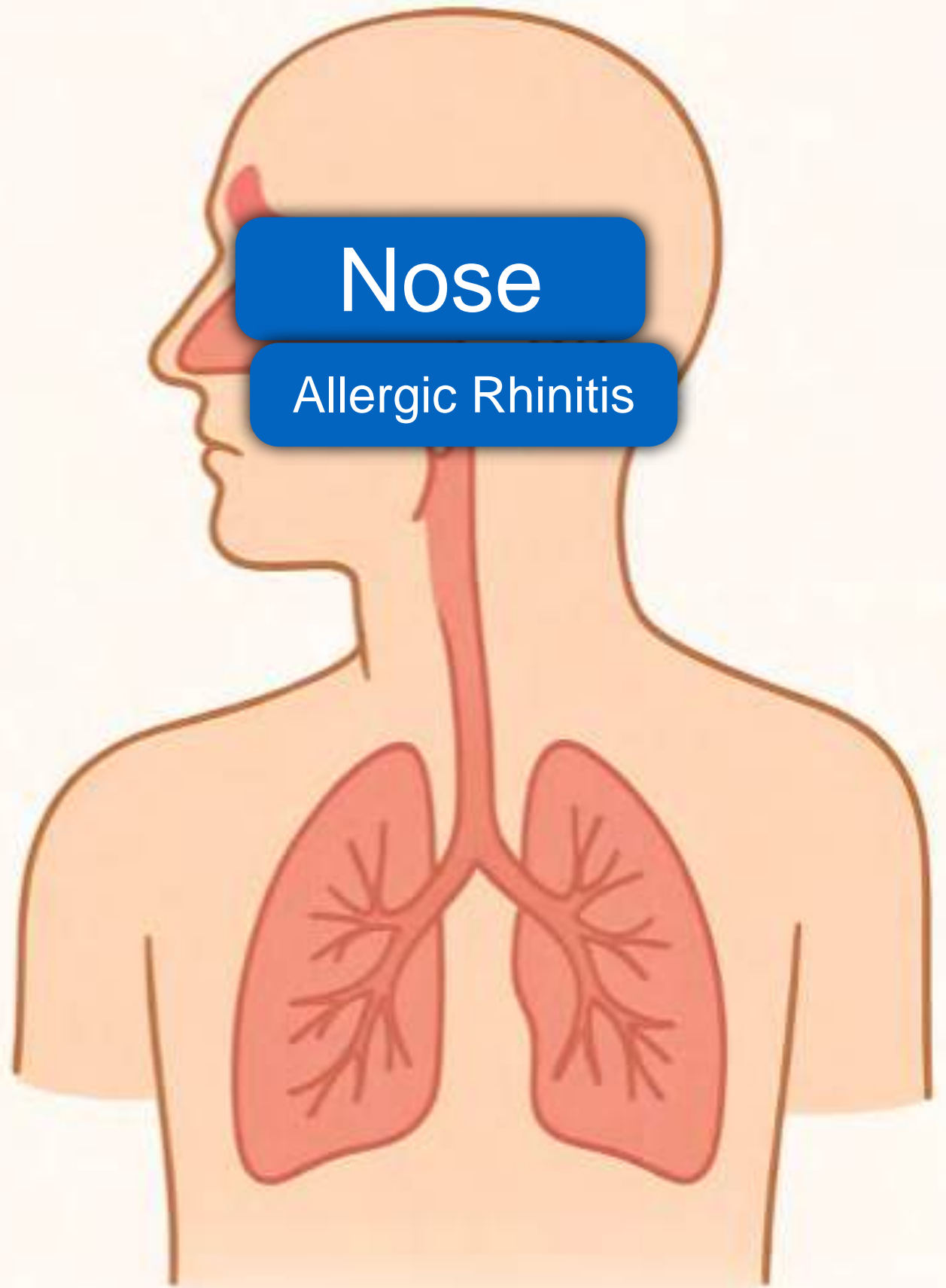


## Saline rinses



Nose

Allergic Rhinitis





# Treatment





# Navage



Roll over image to zoom in.

## Navage Nasal Care Starter Bundle: Navage Nose Cleaner and 20 SaltPod Capsules

[Visit the Navage Store](#)

★★★★★ 10,732 ratings | 249 answered questions

Price: **\$99.95** (\$99.95 / Count) ✓ **prime** & **FREE** Returns

Get \$125 off: Pay \$0.00 upon approval for the **Amazon Business Prime Card**. Terms apply.

Style: **Standard packaging**

Brand	Navage
Ingredients	Sodium chloride (purified sea salt) and purified water.
Item Form	Capsule
Package Type	Box
Age Range (Description)	Kid

[See more](#)

### About this item

- Your NOSE is the body's AIR FILTER, the first line of defense against airborne germs and allergens. Now you can keep your nose clean with easy-to-use Naväge nasal rinse!
- Naväge uses POWERED SUCTION to FLUSH OUT allergens, germs, dirt, and mucus. Naväge is the world's ONLY nose cleaner with powered suction. You'll love that clean nose feeling!
- For fast, all-natural relief from allergies and sinus congestion – WITHOUT DRUGS! Naväge operates only with genuine Naväge SaltPod capsules.
- Bundle includes Naväge Nose Cleaner, 20 Naväge SaltPods inside the box, 1 pair of Standard Nose Pillows, and batteries. \$109.95 if purchased separately. You save \$10 (9%)!
- Make good NASAL hygiene, YOUR new normal. CLEAN NOSE, HEALTHY LIFE!



# Truth or Tale?

Use a nasal rinse daily



# Neti-pot

62% lower incidence of sinusitis after stopping Neti-pots

Use nasal irrigation no more than 1-3 weeks

Nsouli TM, Schluckebier CD, McSorley-Gerard EJ, et al. Long-term use of nasal saline irrigation: harmful or helpful? Ann Allergy Asthma Immunol 103(suppl 3):A3-A146, 2009. (Abstracts of the 2009 annual meeting of the American College of Allergy, Asthma, and Immunology, Miami, FL, November 5-10, 2009.)

<http://www.webmd.com/allergies/guide/neti-pot-nasal-irrigation-pros-and-cons?page=2>



## Neti-pot

"The nasal mucus...contains very important immune elements that are the first line of respiratory defense against infections"

Talal Nsouli, MD

Nsouli TM, Schluckebier CD, McSorley-Gerard EJ, et al. Long-term use of nasal saline irrigation: harmful or helpful? Ann Allergy Asthma Immunol 103(suppl 3):A3-A146, 2009. (Abstracts of the 2009 annual meeting of the American College of Allergy, Asthma, and Immunology, Miami, FL, November 5-10, 2009.)

<http://www.webmd.com/allergies/guide/neti-pot-nasal-irrigation-pros-and-cons?page=2>



# BRAIN-EATING AMOEBA


*Naegleria fowleri* is a microscopic amoeba that lives in warm, fresh waters. It can enter the nose and pass through the sinus membranes into the olfactory bulb, reproduces by fission and spreads throughout the brain. The amoeba consumes brain tissue, causes swelling of the brain and finally death.

There are three stages in the amoeba's life cycle: cyst, trophozoite and a flagellated form. The trophozoite is the infectious form.





# Case Summary

-  Jason, 39-year-old CPA with persistent nasal congestion.
  - Symptoms: "Can't breathe through my nose at night—wakes me up." Morning stuffiness, post-nasal drip
- - Current OTC: **Loratadine daily**
  - Triggers: Office pollen, scented candles, window open at night



# Anti-histamines

Not all antihistamines  
are created equal.  
Choose wisely.



**Drowsiness ranking:  
The trade-off between  
efficacy and sedation**



# Anti-histamines

Most effective

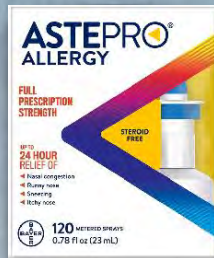
Least effective

Most drowsiness

Least drowsiness



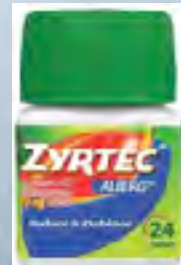
## Sprays



## Saline rinses

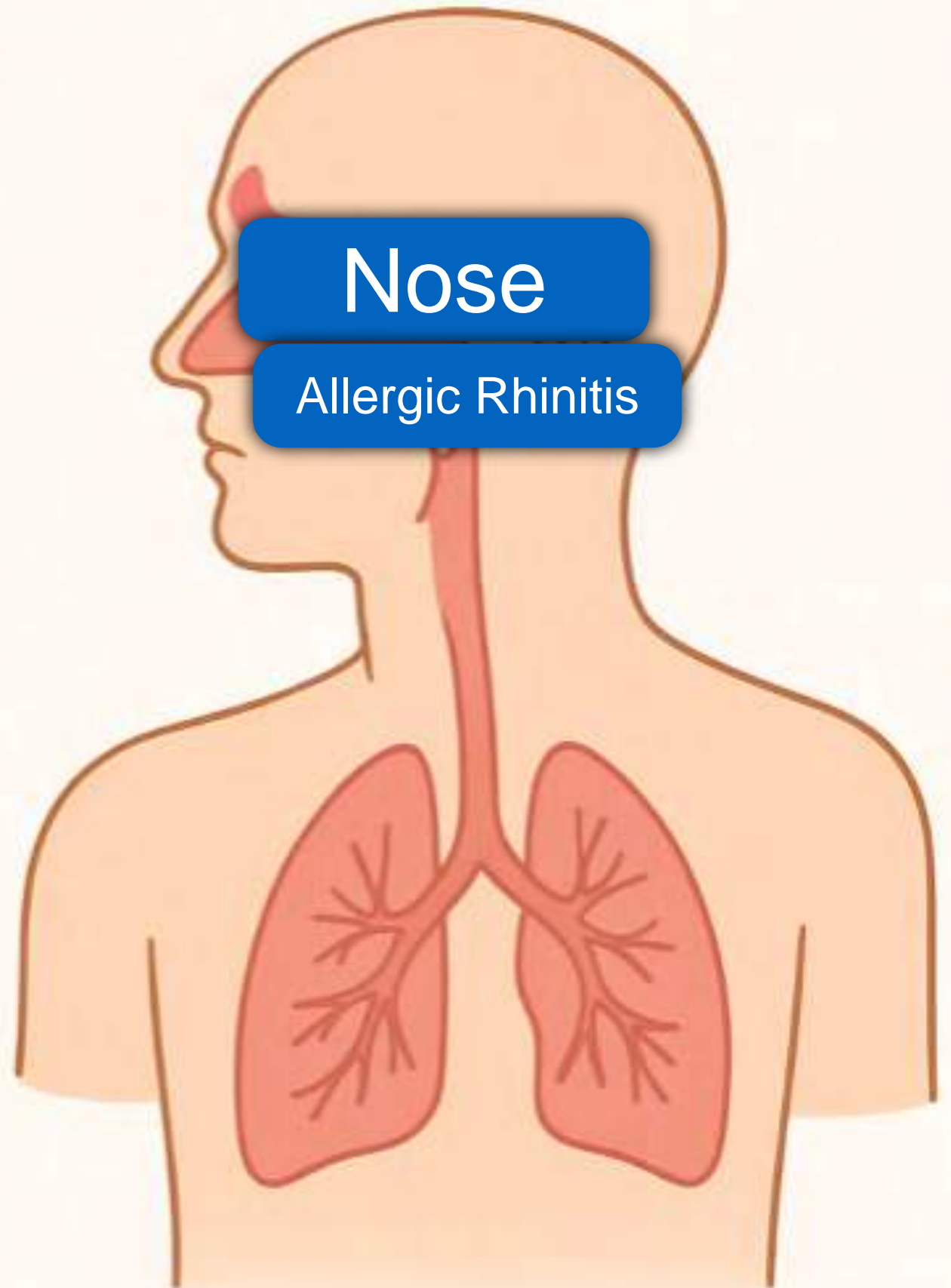


## Oral anti-histamines



Nose

Allergic Rhinitis



# Case Vignette: Trick or Trigger: Allergy in Fall



# Case Summary

- James, 29-year-old software developer
- Complaints: Sneezing, congestion, post-nasal drip (Sept Oct)
- Reports chest tightness at night (mild asthma history)
- Current meds: Loratadine
- No ocular complaints
- Lives near fields, ragweed exposure

# Case Summary

- James, 29-year-old software developer
- Complaints: Sneezing, congestion, post-nasal drip (Sept Oct)
- Reports chest tightness at night (mild asthma history)
- Current meds: Loratadine
- No ocular complaints
- Lives near fields, ragweed exposure



# Efficacy

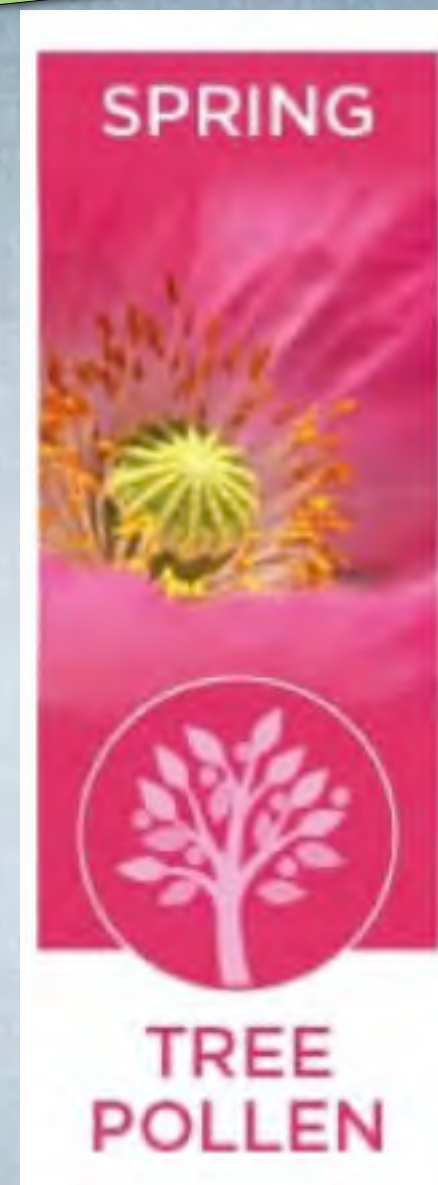
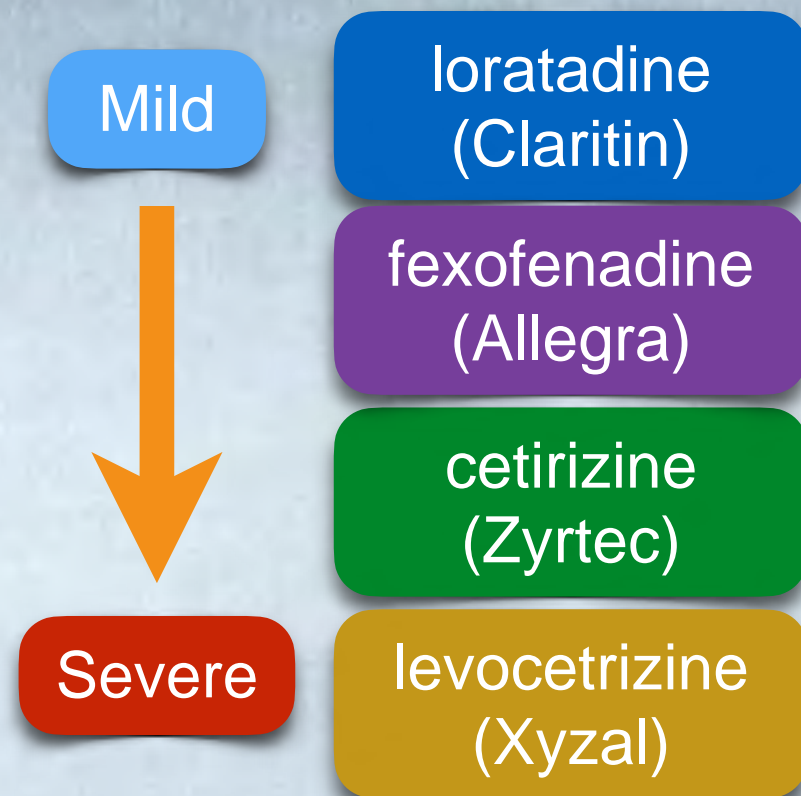
## SEASONAL ALLERGIES



Day JH, Briscoe M, Rafeiro E, Chapman D, Kramer B. Comparative onset of action and symptom relief with cetirizine, loratadine, or placebo in an environmental exposure unit in subjects with seasonal allergic rhinitis: confirmation of a test system. *Ann Allergy Asthma Immunol.* 2001 Dec;87(6):474-81. doi: 10.1016/S1081-1206(10)62260-0. PMID: 11770694.



# Efficacy



Day JH, Briscoe M, Rafeiro E, Chapman D, Kramer B. Comparative onset of action and symptom relief with cetirizine, loratadine, or placebo in an environmental exposure unit in subjects with seasonal allergic rhinitis: confirmation of a test system. *Ann Allergy Asthma Immunol.* 2001 Dec;87(6):474-81. doi: 10.1016/S1081-1206(10)62260-0. PMID: 11770694.



# Efficacy

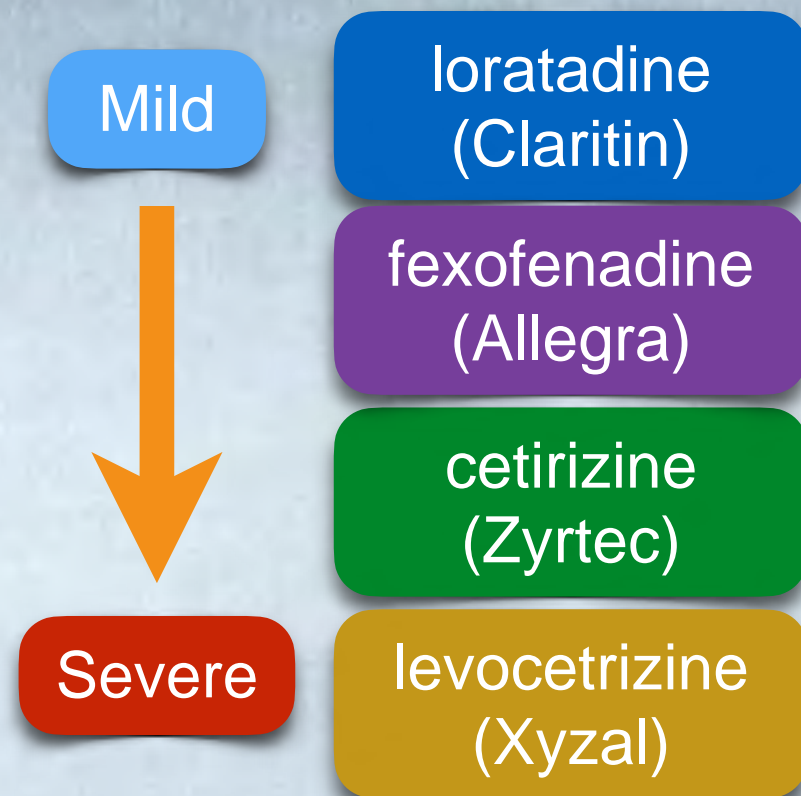
## SEASONAL ALLERGIES



Day JH, Briscoe M, Rafeiro E, Chapman D, Kramer B. Comparative onset of action and symptom relief with cetirizine, loratadine, or placebo in an environmental exposure unit in subjects with seasonal allergic rhinitis: confirmation of a test system. *Ann Allergy Asthma Immunol.* 2001 Dec;87(6):474-81. doi: 10.1016/S1081-1206(10)62260-0. PMID: 11770694.



# Efficacy



Day JH, Briscoe M, Rafeiro E, Chapman D, Kramer B. Comparative onset of action and symptom relief with cetirizine, loratadine, or placebo in an environmental exposure unit in subjects with seasonal allergic rhinitis: confirmation of a test system. *Ann Allergy Asthma Immunol.* 2001 Dec;87(6):474-81. doi: 10.1016/S1081-1206(10)62260-0. PMID: 11770694.



# Efficacy

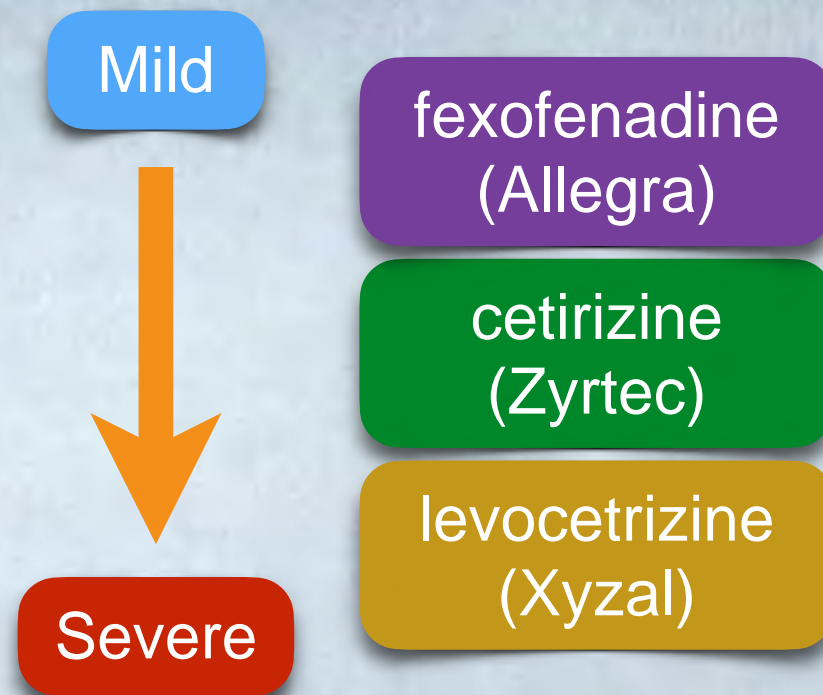
## SEASONAL ALLERGIES



Day JH, Briscoe M, Rafeiro E, Chapman D, Kramer B. Comparative onset of action and symptom relief with cetirizine, loratadine, or placebo in an environmental exposure unit in subjects with seasonal allergic rhinitis: confirmation of a test system. *Ann Allergy Asthma Immunol.* 2001 Dec;87(6):474-81. doi: 10.1016/S1081-1206(10)62260-0. PMID: 11770694.



# Efficacy



Day JH, Briscoe M, Rafeiro E, Chapman D, Kramer B. Comparative onset of action and symptom relief with cetirizine, loratadine, or placebo in an environmental exposure unit in subjects with seasonal allergic rhinitis: confirmation of a test system. *Ann Allergy Asthma Immunol.* 2001 Dec;87(6):474-81. doi: 10.1016/S1081-1206(10)62260-0. PMID: 11770694.



# Efficacy

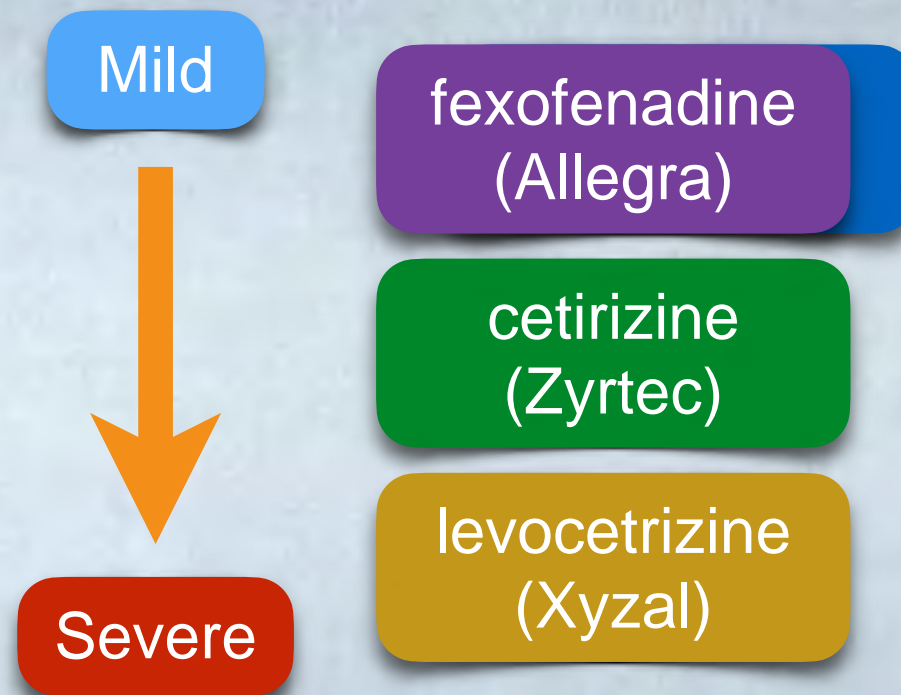
## SEASONAL ALLERGIES



Day JH, Briscoe M, Rafeiro E, Chapman D, Kramer B. Comparative onset of action and symptom relief with cetirizine, loratadine, or placebo in an environmental exposure unit in subjects with seasonal allergic rhinitis: confirmation of a test system. *Ann Allergy Asthma Immunol.* 2001 Dec;87(6):474-81. doi: 10.1016/S1081-1206(10)62260-0. PMID: 11770694.

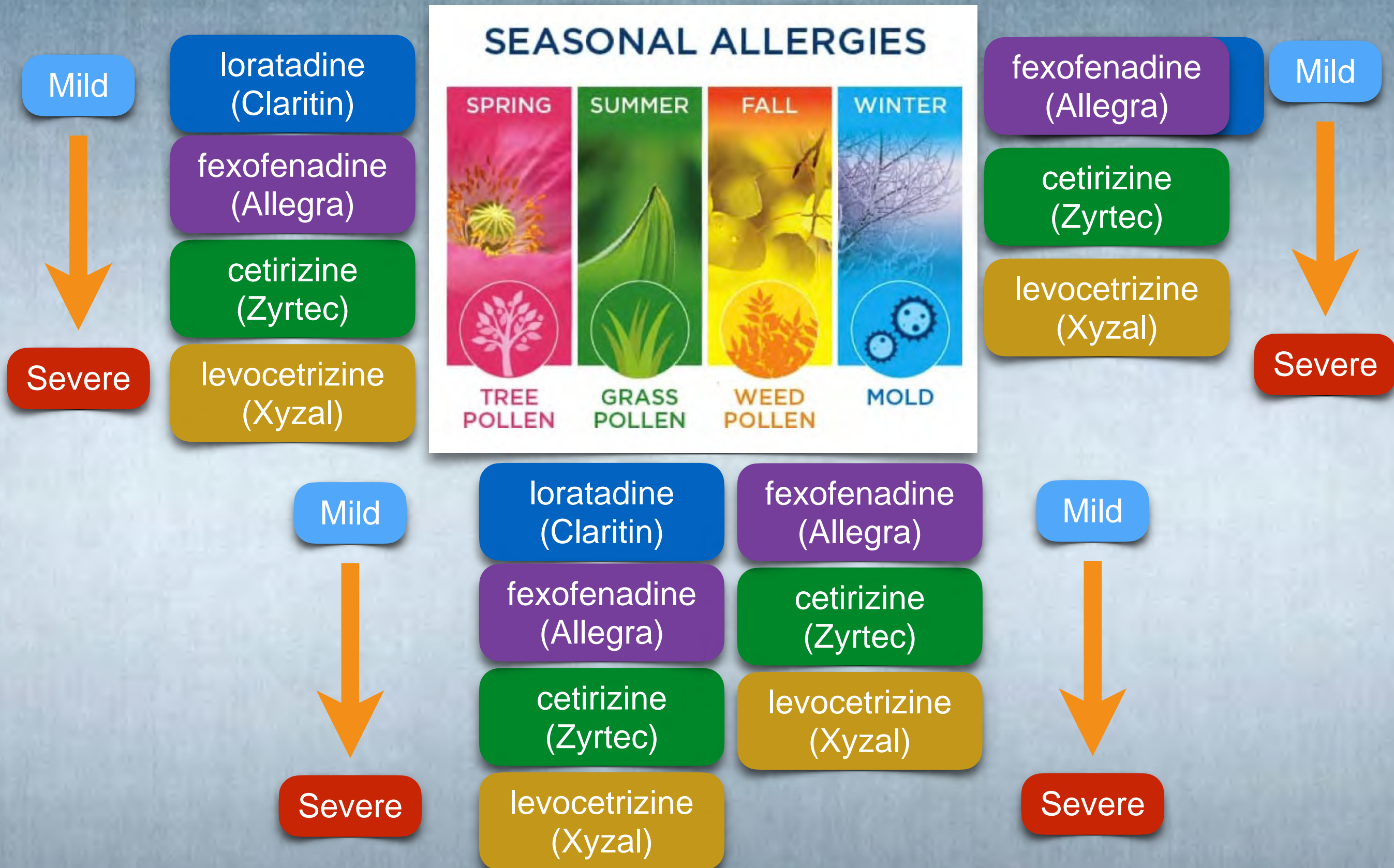


# Efficacy



Day JH, Briscoe M, Rafeiro E, Chapman D, Kramer B. Comparative onset of action and symptom relief with cetirizine, loratadine, or placebo in an environmental exposure unit in subjects with seasonal allergic rhinitis: confirmation of a test system. *Ann Allergy Asthma Immunol*. 2001 Dec;87(6):474-81. doi: 10.1016/S1081-1206(10)62260-0. PMID: 11770694.





Day JH, Briscoe M, Rafeiro E, Chapman D, Kramer B. Comparative onset of action and symptom relief with cetirizine, loratadine, or placebo in an environmental exposure unit in subjects with seasonal allergic rhinitis: confirmation of a test system. Ann Allergy Asthma Immunol. 2001 Dec;87(6):474-81. doi: 10.1016/S1081-1206(10)62260-0. PMID: 11770694.



## Rotate anti-histamines

“Loratadine (Claritin) weak against ragweed and mold”

Rotate to a different antihistamine  
(especially Fall and Winter if using  
(Claritin) loratadine)

Day, James H. et al. Cetirizine, loratadine, or placebo in subjects with seasonal allergic rhinitis: Effects after controlled ragweed pollen challenge in an environmental exposure unit *Journal of Allergy and Clinical Immunology*, Volume 101, Issue 5, 638 – 645

McGill A. The Best Antihistamines for Mold Allergies: Allegra vs Zyrtec vs Claritin vs Xyzal vs Benadryl



# Case Summary

- James, 29-year-old software developer
- Complaints: Sneezing, congestion, post-nasal drip (Sept Oct)
- Reports chest tightness at night (mild asthma history)
- Current meds: Loratadine
- No ocular complaints
- Lives near fields, ragweed exposure

# Asthma



# Primatene mist

Primatene mist  
0.125mg per spray  
inhalation epinephrine



Domingo C, Singh D. The Changing Asthma Management Landscape and Need for Appropriate SABA Prescription. Adv Ther. 2023 Apr;40(4):1301-1316. doi: 10.1007/s12325-022-02410-z. Epub 2023 Jan 30. PMID: 36715896; PMCID: PMC10070225.



# Primatene mist

“Primatene Mist...will offer suboptimal care for the treatment of asthma...none of the expert guidelines recommend the use...[of] Primatene Mist...to treat asthma”

“[NIH] recommends against the use...[it] has the potential for ‘excessive cardiac stimulation.’”

American Lung Association

[https://www.lung.org/media/press-releases/fda-approval-primatene#:~:text=CHICAGO, IL](https://www.lung.org/media/press-releases/fda-approval-primatene#:~:text=CHICAGO,IL) | November 9,,does not prevent asthma episodes.



# Primatene mist

“We know that the No. 1 reason 10 people die from asthma daily is due to lack of control and overuse of quick-relief medication”

~Tonya Winders, President & CEO at Allergy & Asthma Network

<https://www.jaxallergy.com/primatene-mist-otc-caution/>

# Primatene mist

“Asthma is not a ‘do-it-yourself’ disease that you can treat yourself with OTC medication.”

~Bradley Chipps, MD, ACAAI President

<https://www.jaxallergy.com/primatene-mist-otc-caution/>





Ocular

Allergic Conjunctivitis

Nose

Allergic Rhinitis

Throat

Allergic Cough

Skin

Atopic  
Dermatitis

Urticaria  
Hives

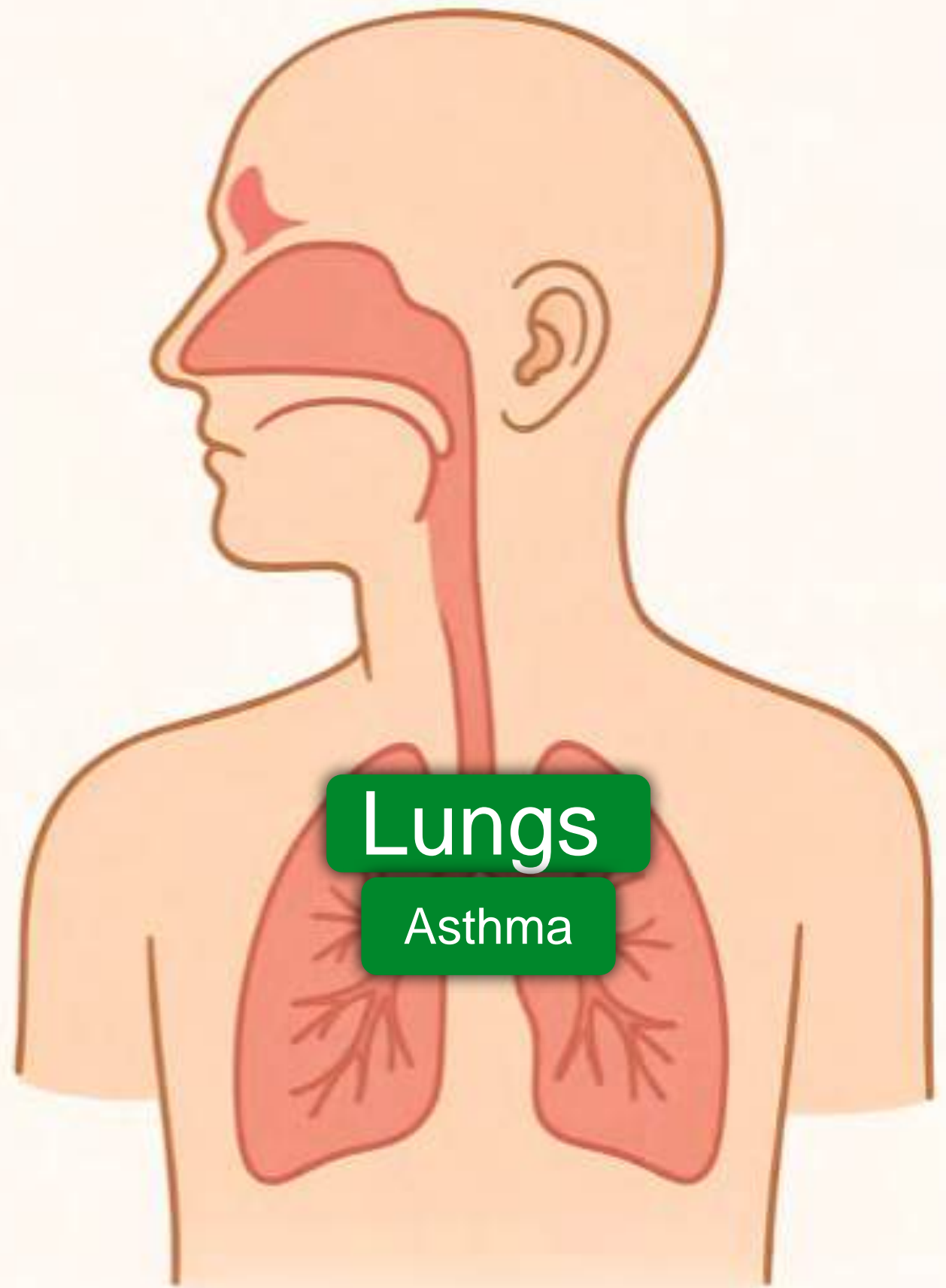
Lungs

Asthma

Prescribed  
Inhalers



Primatene mist  
emergency use



Lungs

Asthma



## SHORT-ACTING BETA<sub>2</sub>-AGONIST (SABA) BRONCHODILATORS

relax tight muscles in airways and other airways at symptoms such as coughing, wheezing and shortness of breath for 3-6 hours

<b>Albuterol Sulfate Inhalation Solution</b> 0.09, 0.18, 2.3 mg, 3 mL A, G	<b>ProAir<sup>®</sup> Digihaler<sup>™</sup></b> 90 mcg, 180 mcg, 270 mcg albuterol sulfate D, G	<b>ProAir<sup>®</sup> RespiClick<sup>™</sup></b> 90 mcg, 180 mcg, 270 mcg albuterol sulfate D, G	<b>Proventil<sup>®</sup> HFA</b> 90 mcg, 180 mcg, 270 mcg albuterol sulfate D, G	<b>Ventolin<sup>®</sup> HFA</b> 90 mcg, 180 mcg, 270 mcg albuterol sulfate D, G	<b>Xopenex<sup>®</sup></b> 0.31, 0.63, 1.25 mg, 3 mL levalbuterol hydrobromide A, G, M	<b>Xopenex<sup>®</sup> HFA</b> 40 mcg, 80 mcg, 160 mcg levalbuterol hydrobromide D, G
--	--	---	---	--	---	--

## SABA and ICS

containing SABA to relax airway muscles and effect quick relief of symptoms, and inhaled corticosteroid (ICS) to reduce inflammation

<b>AIRSPRA<sup>®</sup></b> 90, 180 mcg albuterol sulfate and budesonide D, G, A
--

## INHALED CORTICOSTEROIDS (ICS)

reduce and prevent swelling of airway lining, they do not relieve sudden symptoms of coughing, wheezing or shortness of breath

<b>Advair<sup>®</sup> HFA</b> 65, 160 mcg, 250 mcg ciclesonide D, G, A	<b>Asmanex<sup>®</sup> Digihaler<sup>™</sup></b> 55, 110, 220 mcg fluticasone propionate inhalation powder D, G, A	<b>Asmanex<sup>®</sup> Ellipta<sup>™</sup></b> 50, 100, 200 mcg fluticasone propionate inhalation powder D, G, A	<b>Asmanex<sup>®</sup> HFA</b> 50, 100, 200 mcg fluticasone propionate HFA D, G, A	<b>Asmanex<sup>®</sup> Twisthaler<sup>™</sup></b> 110, 220 mcg fluticasone propionate inhalation powder D, G, A	<b>Fluticasone Propionate Diskus Inhalation Powder</b> 50, 100, 250 mcg Fluticasone propionate D, G, A	<b>Fluticasone Propionate HFA</b> 44, 110, 220 mcg Fluticasone propionate HFA D, G, A	<b>Pulmicort Flexhaler<sup>™</sup></b> 90, 180 mcg budesonide inhalation powder D, G, A	<b>Pulmicort Respules<sup>™</sup></b> 0.25, 0.50, 1.0 mg, 2 mL budesonide inhalation suspension D, G, A	<b>QVAR<sup>®</sup> Redihaler<sup>™</sup></b> 40, 80 mcg beclomethasone dipropionate D, G, A
---	---	---	---	--	---	--	--	--	---

## LONG-ACTING BETA<sub>2</sub>-AGONIST (LABA) BRONCHODILATORS

relax tight muscles in airways and other airways throughout day/night, reducing symptoms such as coughing, wheezing and shortness of breath for 12 hours

<b>Brevo<sup>®</sup></b> 15 mg, 2 mL arformoterol hydrobromide inhalation solution D, G	<b>Formoterol<sup>®</sup></b> 20 mcg, 2 mL formoterol fumarate inhalation solution D, G	<b>Serevent<sup>®</sup> Diskus<sup>™</sup></b> 50 mcg salmeterol xinafoate inhalation powder D, G, A	<b>Serevent<sup>®</sup> RespiClick<sup>™</sup></b> 2.5 mcg salmeterol xinafoate inhalation powder D, G, A
--	--	---	--

## MUSCARINIC ANTAGONISTS (ANTICHOLINERGICS)

relieve cough, sputum production, wheezing and chest tightness associated with chronic lung diseases

<b>Short-Acting</b> <b>Aтровент<sup>®</sup> HFA</b> 17 mcg ipratropium bromide D, G, A	<b>Long-Acting</b> <b>Letrose<sup>®</sup> Ellipta<sup>™</sup></b> 52.5 mcg acetylcholine antagonist powder D, G, A	<b>Ipratropium Bromide Inhalation Solution</b> 50, 100, 250 mcg, 2.5 mL D, G, A	<b>Spiriva<sup>®</sup> HandiHaler<sup>™</sup></b> 13 mcg tiotropium bromide inhalation powder D, G, A	<b>Spiriva<sup>®</sup> Respimat<sup>™</sup></b> 1.25, 2.5 mcg tiotropium bromide D, G, A	<b>Tudorza<sup>®</sup> Pressair<sup>™</sup></b> 500 mcg acetylcholine antagonist powder D, G, A	<b>Vuipri<sup>®</sup></b> 175 mcg, 3 mL acetylcholine antagonist solution D, G, A
--	--	---	--	---	--	--

## COMBINATION MEDICATIONS

contain ICS and LABA

<b>Advair<sup>®</sup> Diskus<sup>™</sup></b> 100/50, 250/50, 500/50 mcg Fluticasone propionate and salmeterol xinafoate inhalation powder D, G, A	<b>Advair<sup>®</sup> HFA</b> 45/21, 110/21, 230/21 mcg Fluticasone propionate and salmeterol xinafoate HFA D, G, A	<b>AirDuo<sup>®</sup> Digihaler<sup>™</sup></b> 55/14, 110/14, 232/14 mcg Fluticasone propionate and salmeterol xinafoate inhalation powder D, G, A	<b>AirDuo<sup>®</sup> RespiClick<sup>™</sup></b> 55/14, 110/14, 232/14 mcg Fluticasone propionate and salmeterol xinafoate inhalation powder D, G, A	<b>Breo<sup>®</sup> Ellipta<sup>™</sup></b> 50/25, 100/25, 200/25 mcg Fluticasone furoate and vilanterol inhalation powder D, G, A	<b>Breoyna<sup>®</sup></b> 80/4.5, 160/4.5 mcg budesonide and formoterol fumarate dihydrate (approved for use of Spiriva) D, G, A	<b>Dulera<sup>®</sup></b> 50/4.5, 100/4.5, 200/4.5 mcg budesonide, formoterol fumarate dihydrate and formoterol fumarate dihydrate D, G, A	<b>Symbicort<sup>®</sup></b> 80/4.5, 160/4.5 mcg budesonide and formoterol fumarate dihydrate D, G, A	<b>Wixela<sup>®</sup> Inhub<sup>™</sup></b> 100/50, 250/50, 500/50 mcg Fluticasone propionate and salmeterol xinafoate inhalation powder D, G, A
--	--	--	---	---	--	---	--	---

contain LABA and long-acting muscarinic antagonist (LAMA)

<b>Ampiro<sup>®</sup> Ellipta<sup>™</sup></b> 62.5/25 mcg arformoterol and formoterol fumarate dihydrate inhalation powder D, G, A	<b>Brevo<sup>®</sup> Aerosphere<sup>™</sup></b> 15/3 mcg arformoterol and formoterol fumarate dihydrate inhalation powder D, G, A	<b>Dualin<sup>®</sup> Pressair<sup>™</sup></b> 100/12 mcg arformoterol and formoterol fumarate dihydrate inhalation powder D, G, A	<b>Stiolto<sup>®</sup> Respimat<sup>™</sup></b> 2.5/2.5 mcg tiotropium bromide and arformoterol fumarate dihydrate inhalation powder D, G, A
---	--	---	---

contain ICS, LABA and LAMA

<b>Trilegy<sup>®</sup> Ellipta<sup>™</sup></b> 200/50/6.25 mcg, 100/50/6.25 mcg fluticasone furoate, budesonide and vilanterol inhalation powder D, G, A	<b>Brevo<sup>®</sup> Aerosphere<sup>™</sup></b> 15/3/4.5 mcg arformoterol, formoterol fumarate dihydrate and formoterol fumarate dihydrate D, G, A	<b>Combivent<sup>®</sup> Respimat<sup>™</sup></b> 20/100 mcg ipratropium bromide and tiotropium bromide D, G, A	<b>Ipratropium Bromide and Albuterol Sulfate Inhalation Solution</b> 2.5 mg, 3 mL D, G, A
---	---	--	---

contain SABA and short-acting muscarinic antagonist (SAMA)

## BIOLOGICS

target cells and pathways that cause airway inflammation; delivered by injection IV

<b>Cinqair<sup>®</sup></b> 62.5/25 mL reslizumab A	<b>Dupixent<sup>®</sup></b> 100, 200, 300 mg dupilumab A	<b>Fasenra<sup>®</sup></b> 30 mg reslizumab A	<b>Mucata<sup>®</sup></b> 100 mg mepolizumab A	<b>Tezspire<sup>®</sup></b> 210 mg reslizumab A	<b>Xolair<sup>®</sup></b> 75 to 275 mg omalizumab A
---	---	--	---	--	--

Revised by Dennis Williams, PharmD

Generic versions of some brand name inhalers are not included in this product. Generic inhalers may be a different color.

## PDE4 INHIBITORS

target lung inflammation and reduce secretions

<b>Onbreo<sup>®</sup></b> 250, 500 mcg roflumilast C
---

## LEUKOTRIENE MODIFIERS

block chemicals called leukotrienes that cause airway inflammation; available as tablet or granule

<b>Singulair<sup>®</sup></b> 4, 5, 10 mg montelukast A	<b>Zafirlukast</b> 10, 20 mg Zafirlukast A
---	---



# Have you heard of Asthma Peak Week?





# Prepare for Asthma PEAK WEEK

Back to school means a return of germ swapping and a dramatic increase in serious asthma attacks. Also triggered by seasonal allergens like ragweed pollen, attacks tend to climax during the third week of September, known as Asthma Peak Week.

## Asthma by the Numbers



**14M**  
school days  
missed annually  
due to asthma

**14.2M**  
work days  
missed annually  
due to asthma

**25%** of all children's  
asthma hospitalizations  
happen in September



**80%**  
in children  
**50%**  
in adults  
percentage of asthma attacks  
that are caused by viral infections

**#1** medical concern among Olympic athletes

**Extra Credit:**  
Watch for  
COVID-19  
Symptoms and  
Vaccinate!

Children six months and older are eligible for COVID vaccination. Check the current CDC guidelines for more details.

Contact your doctor if you notice these common COVID-19 symptoms:  
□ Fever □ Cough □ Shortness of Breath

**njhealth.org**  
1.877.CALL NJH (1.877.225.5654)

© 2023 National Jewish Health

**National Jewish Health**  
Breathing Science is Life.

## 10 Ways to Protect Against Asthma Peak Week

- 1 Wash hands or use hand sanitizer often, especially before eating and touching the face, and after using the restroom.
- 2 Follow your child's Asthma Action Plan.
- 3 Cover nose and mouth when coughing and sneezing.
- 4 Monitor new or worsening symptoms and peak flow rates (when available).
- 5 Keep sick family members home.
- 6 Use medications before symptoms begin.
- 7 Consistently use asthma and allergy medications, even when symptom free.
- 8 Minimize environmental triggers.
- 9 Keep medication refills on hand.
- 10 Keep asthma medication at school.

## How to Stay Healthy During Peak Asthma Season

Asthma Peak Week: 3rd week of September



Be aware of outdoor environmental triggers. Pollen, ground-level ozone, and wildfire smoke can make your asthma worse.



Know the signs. Coughing, chest tightness, and shortness of breath are signs your asthma may be getting worse.



Recognize that experiencing worsened symptoms during physical activities is a sign that your asthma may not be under control.



Be vigilant of respiratory viruses like the common cold, flu, and even COVID-19. These can exacerbate asthma symptoms, especially during peak asthma season.

### Use these tips to protect yourself and your family.

- 1 Work with your healthcare provider to create an asthma action plan and take your inhaler or other medication as prescribed.
- 2 Stay up to date on immunizations and refill all asthma medications before school starts so you don't run out.
- 3 Support your immune system by getting enough sleep, eating healthy, and managing your stress.
- 4 Keep your child's bedroom clean and free of dust and mold, and consider a HEPA air purifier.
- 5 Check the weather and air quality forecast before planning outdoor activities, and stay indoors when there is extreme heat or excessive smoke from wildfires.

**NEEF** National Environmental Education Foundation

Get more info: [NEEFusa.org](https://www.NEEFusa.org)



# Asthma

Asthma Peak Week:

3rd week of September

25% of all asthma hospitalizations

Ragweed highest levels

Flu season starts

Seasonal weather change

Back to school

Mold

School stress



# Pollmageddon

Asthma Peak Week = Allergy Peak Week

“Start taking med[s] around St. Patrick’s Day”

“Now start around Valentine’s Day”

Stanley Fineman, MD  
Allergist, Atlanta

# Case Vignette: Feline Fine Until the Swelling Starts



# Case Summary

- Patient: Angela, 37-year-old yoga instructor
- Eyelid swelling and itchy eyes after visiting a friend with cats
- Hives on arms and torso
- Reports mild tearing and conjunctival itch, no discharge
- Using loratadine PRN, feels it's not working
- Symptoms start ~6 hours post-exposure, last 1–2 days
- No asthma or systemic symptoms

# Case Summary














- Patient: Angela, 37-year-old yoga instructor
- Eyelid swelling and **itchy eyes** after visiting a friend with cats
- Hives on arms and torso
- Reports **mild tearing and conjunctival itch**, no discharge
- Using loratadine PRN, feels it's not working
- Symptoms start ~6 hours post-exposure, last 1–2 days
- No asthma or systemic symptoms



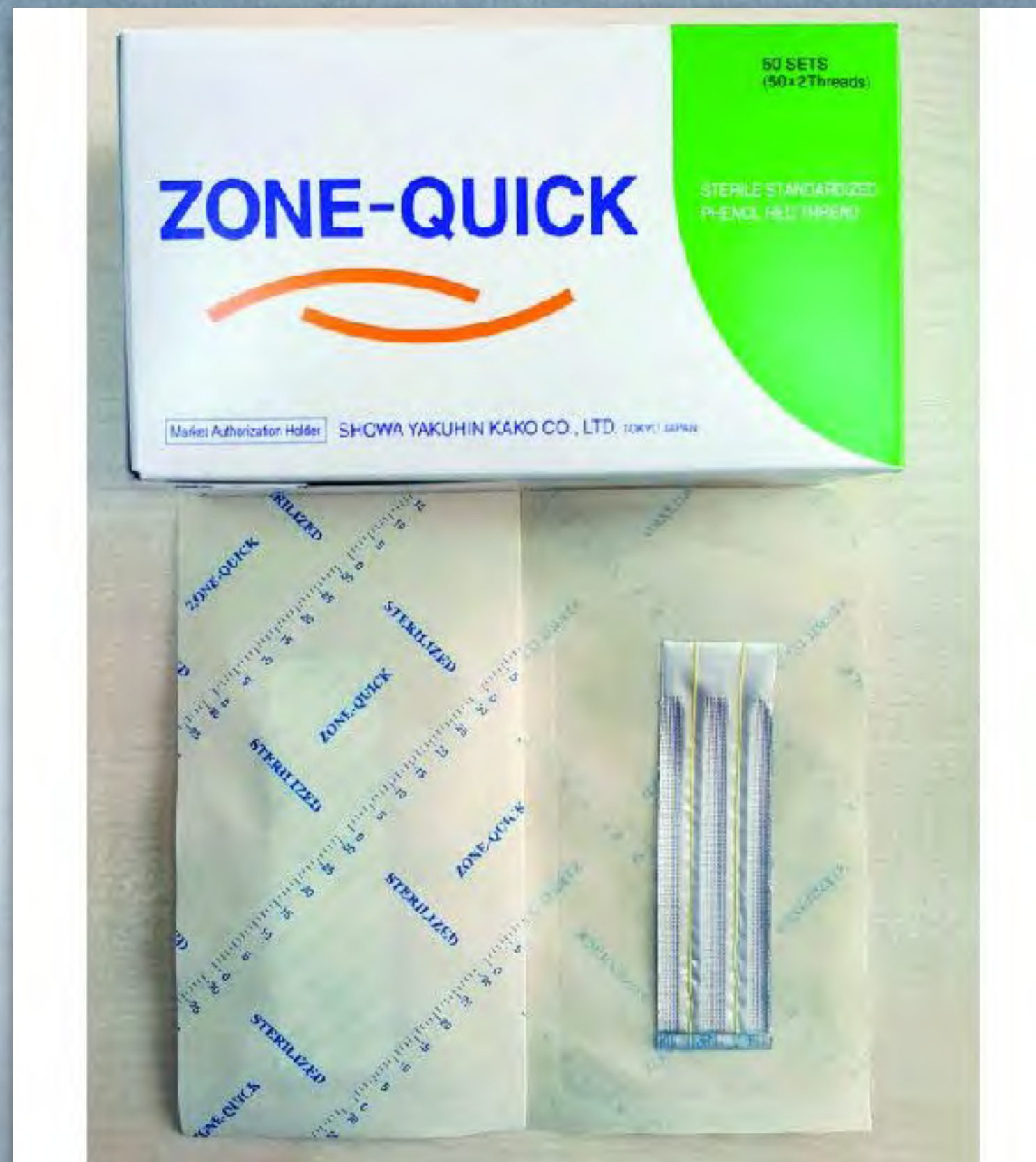
# Topical anti-histamines

## Topical anti-histamines

### OTC Allergy Eye Drops: Comparison

Agent (OTC in US)	Receptor Target	Onset	Duration	Side Effect Profile
 <b>Ketotifen (Zaditor, Alaway)</b> + H <sub>1</sub> antagonist Mast cell stabilizer	 H <sub>1</sub> mast cell stabilizer	 15-30 min	 16-24 hrs	Generally well tolerated, Mild burning/itching risk in some studies
 <b>Olopatadine (Rx in US UOC otherwise)</b> + H <sub>1</sub> antagonist Mast cell stabilizer	 H <sub>1</sub> mast cell stabilizer	 ≥15 min	 Upto 24 h (once daily)	Mild stinging: lower dryness effect compared to Olopatadine
 <b>Alcaftadine (Lastacraft 0.25%)</b> + H <sub>1</sub> antagonist Mast cell stabilizer, reported H <sub>2</sub> /H <sub>4</sub>	 H <sub>1</sub> repoboot H <sub>2</sub> /H <sub>4</sub> activity	 15 min	 Very low dryness risk	Mild burning/instillation site dryness
<b>Pheniramine + Naphazoline (Naphcon-A, Opcon-A, Visine-A)</b> ● No receptor effect (dilution only)	 No receptor effect (dilution only)	Immediate	Short (minutes)	Rebound hyperemia Vasoconstrictor-induced dryness





Villareal AL, Farley W, Pflugfelder SC. Effect of topical ophthalmic epinastine and olopatadine on tear volume in mice. Eye Contact Lens. 2006 Dec;32(6):272-6. doi: 10.1097/01.icl.0000224360.10319.b1. PMID: 17099387.

“After 2 days of treatment,  
epinastine-treated mice showed  
greater mean tear volumes than  
olopatadine-treated mice”

Villareal AL, Farley W, Pflugfelder SC. Effect of topical ophthalmic epinastine and olopatadine on tear volume in mice. Eye Contact Lens. 2006 Dec;32(6):272-6. doi: 10.1097/01.icl.0000224360.10319.b1. PMID: 17099387.



## Comparative pharmacology of marketed antihistamines



Wade L, Bielory L, Rudner S. Ophthalmic antihistamines and H1-H4 receptors. Curr Opin Allergy Clin Immunol. 2012 Oct;12(5):510-6. doi: 10.1097/ACI.0b013e328357d3ba. PMID: 22918191.



Low/No  
Dryness



High Dryness

Wade L, Bielory L, Rudner S. Ophthalmic antihistamines and H1-H4 receptors. Curr Opin Allergy Clin Immunol. 2012 Oct;12(5):510-6. doi: 10.1097/ACI.0b013e328357d3ba. PMID: 22918191.





**Ocular**

Allergic Conjunctivitis

**Nose**

Allergic Rhinitis

**Throat**

Allergic Cough

**Skin**

Atopic  
Dermatitis

Urticaria  
Hives

**Lungs**

Asthma

## Topical anti-histamines



Loteprednol

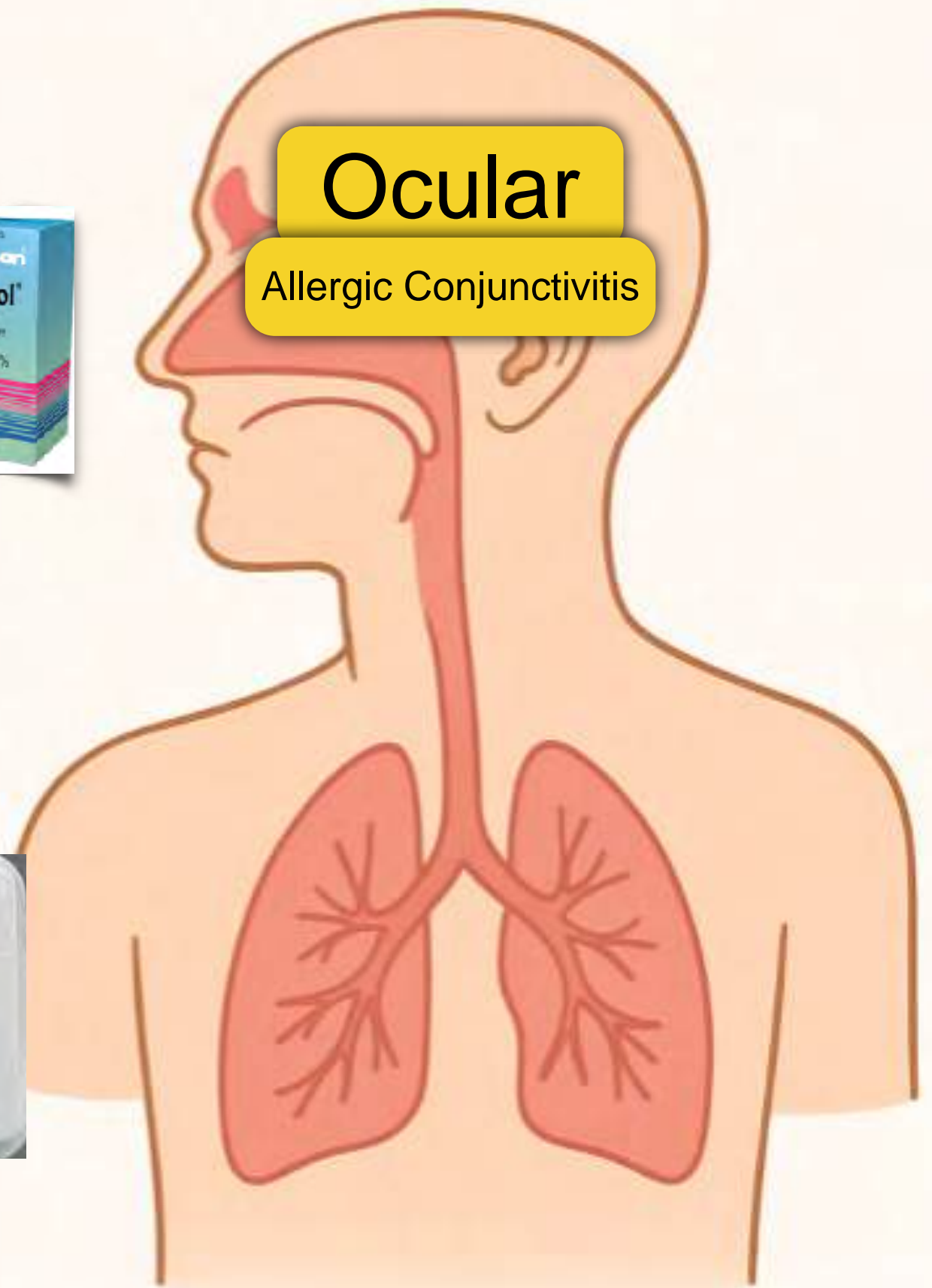


cyclosporine



# Ocular

## Allergic Conjunctivitis





# Case Summary

- Patient: Angela, 37-year-old yoga instructor
- Eyelid swelling and itchy eyes after visiting a friend with cats
- Hives on arms and torso
- Reports mild tearing and conjunctival itch, no discharge
- Using loratadine PRN, feels it's not working
- Symptoms start ~6 hours post-exposure, last 1–2 days
- No asthma or systemic symptoms

# Urticaria Hives Rash



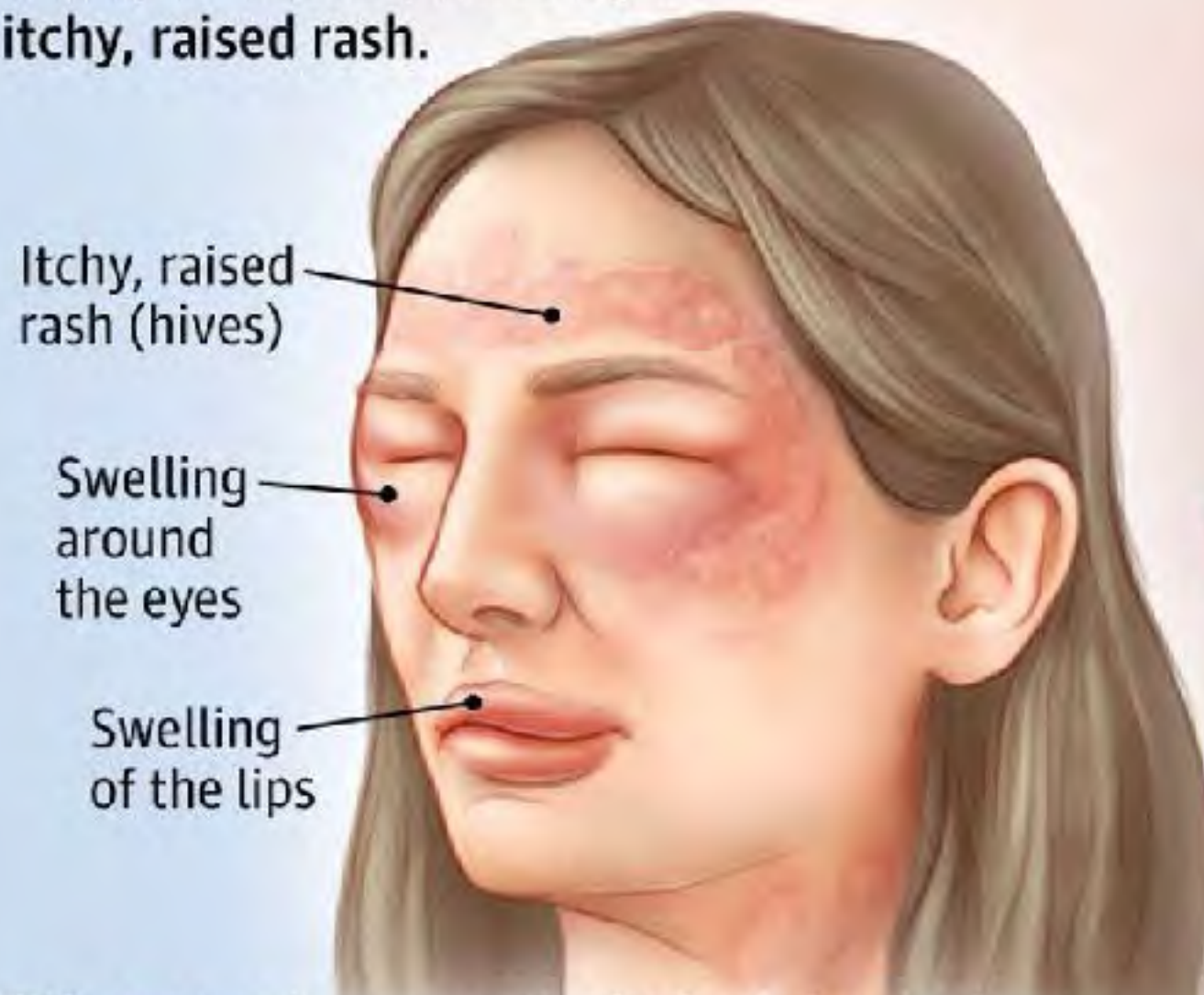


<https://www.verywellhealth.com/rash-around-eyes-8622562>



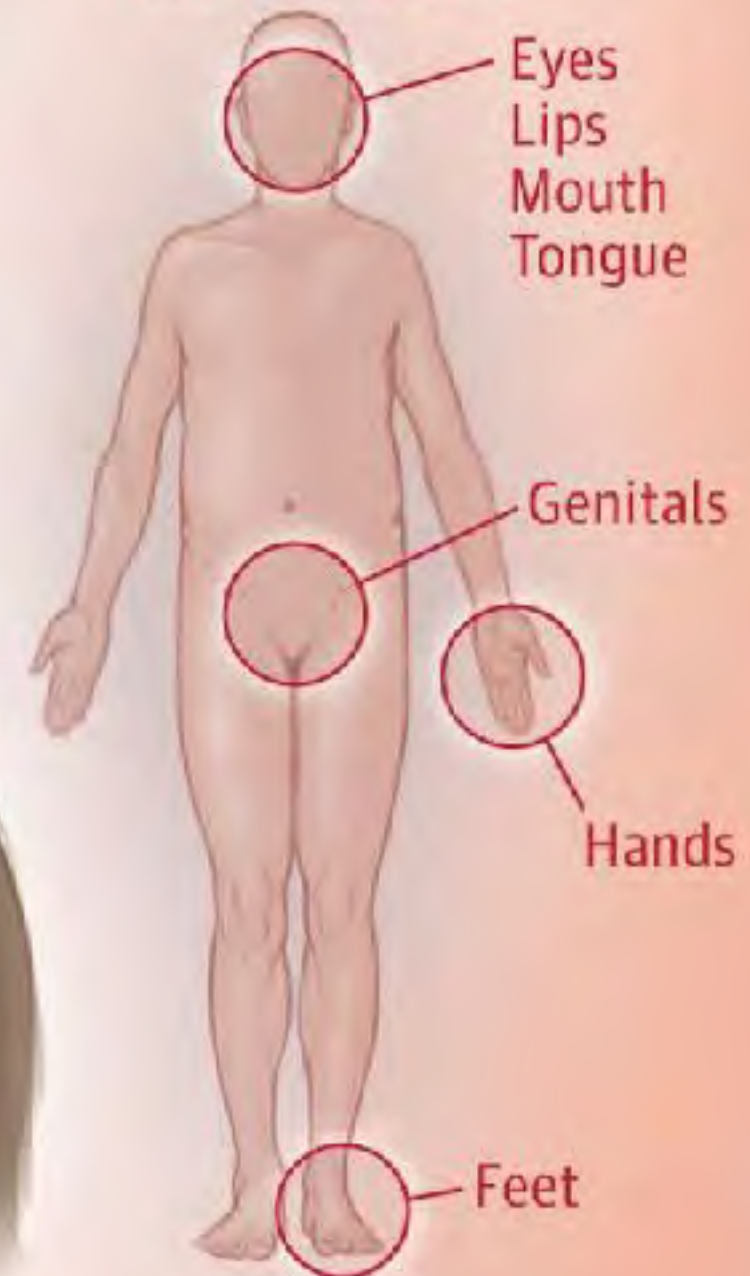
**Angioedema** is swelling in the deep layers of the skin and other tissues.

It may be accompanied by an itchy, raised rash.



Other symptoms may include abdominal pain, shortness of breath, dizziness, and fainting.

**Commonly affected areas**





# H1 histamine receptor

Oral  
anti-histamines



# H2 histamine receptor

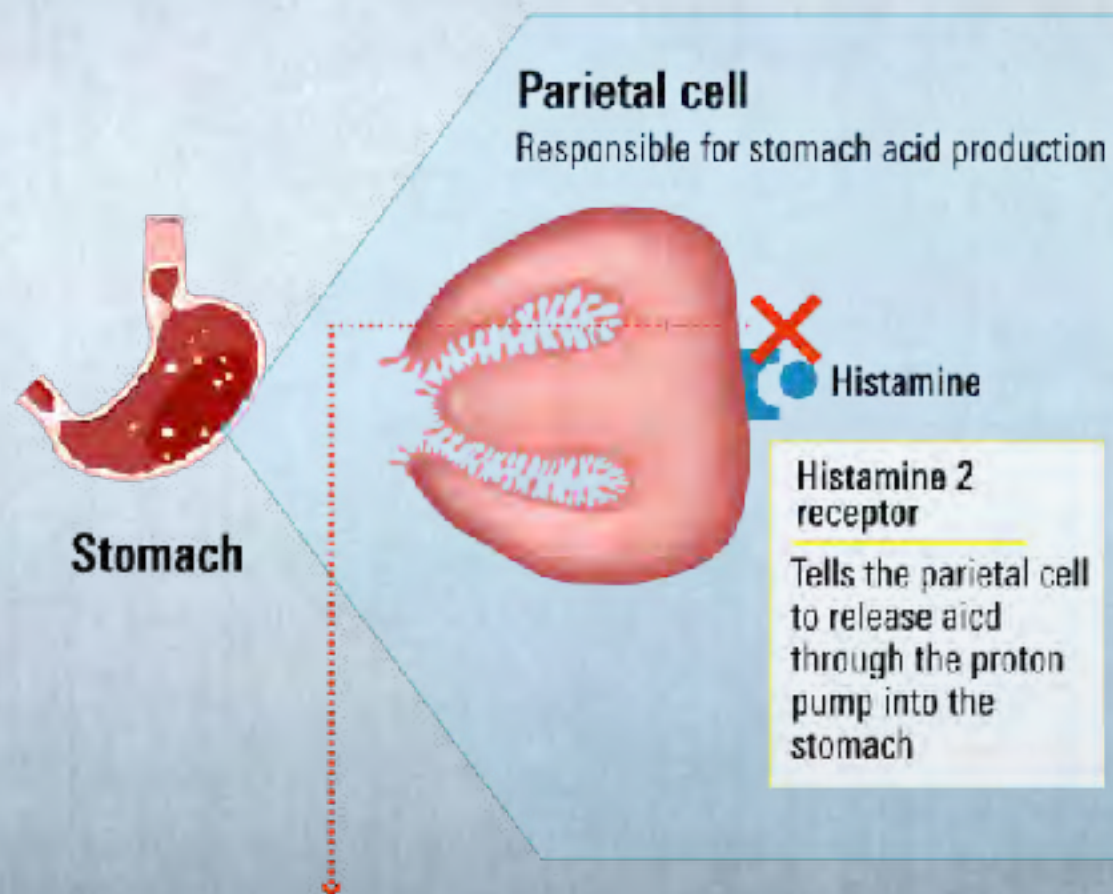
“Fifteen per cent of the histamine receptors in the skin are H2-receptors”

Fedorowicz Z, van Zuuren EJ, Hu N. Histamine H2-receptor antagonists for urticaria. Cochrane Database Syst Rev. 2012 Mar 14;2012(3):CD008596. doi: 10.1002/14651858.CD008596.pub2. PMID: 22419335; PMCID: PMC7390502.



# Treatment

## How H2 Blockers Work



H2 blockers (H<sub>2</sub>RAs) block histamine from binding to the histamine 2 receptor. This prevents the histamine 2 receptor from sending a signal to release acid into the stomach.

Famotidine  
H2 histamine receptor





# Treatment

1. Start with 2G Anti-histamine 2x day
2. Can increase to 4x day
3. Add famotidine 2x day
4. Refer

Oral  
anti-histamines





NDC 41167-4126-4

**NON-DROWSY** 60 ארוך

# Allegra<sup>®</sup> Hives

**24 HR**

**REDUCES  
HIVES and  
RELIEVES  
ITCHING due to hives**

**30 TABLETS**

**NOW  
RECYCLABLE  
CARTON**

**NO PLASTIC  
WINDOW**

  
Actual Size

NDC 41167-4120-3

**NON-DROWSY**

# Allegra<sup>®</sup> ALLERGY

fexofenadine HCl tablet  
**180 mg/antihistamine** **24 HR**

**INDOOR / OUTDOOR ALLERGY RELIEF**

- ✓ Sneezing
- ✓ Runny Nose
- ✓ Itchy, Watery Eyes
- ✓ Itchy Nose or Throat

**30 TABLETS**

**NOW  
RECYCLABLE  
CARTON**

**NO PLASTIC  
WINDOW**

  
Actual Size



# Treatment

1. Avoidance
2. Lubricate
3. Oral anti-histamines
4. Refer Red flags  
(breathing problems, etc)

# Lubricate Dryness triggers Pramoxine



<https://www.youtube.com/watch?v=0P2bFVGReRE>





**Ocular**

Allergic Conjunctivitis

**Nose**

Allergic Rhinitis

**Throat**

Allergic Cough

**Skin**

Atopic  
Dermatitis

Urticaria  
Hives

**Lungs**

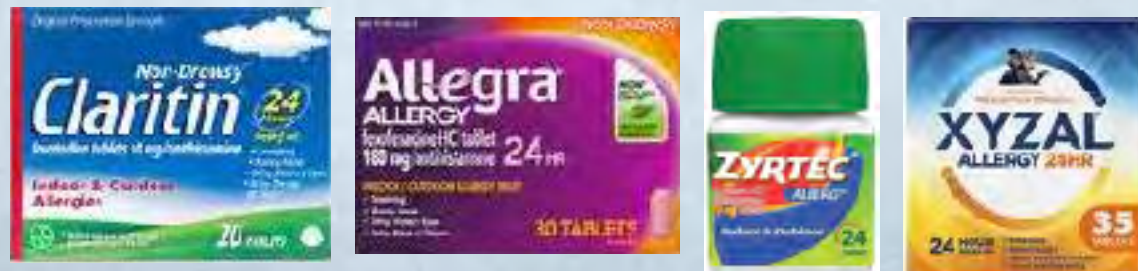
Asthma

# Avoidance

## Lubrication



## Oral anti-histamines



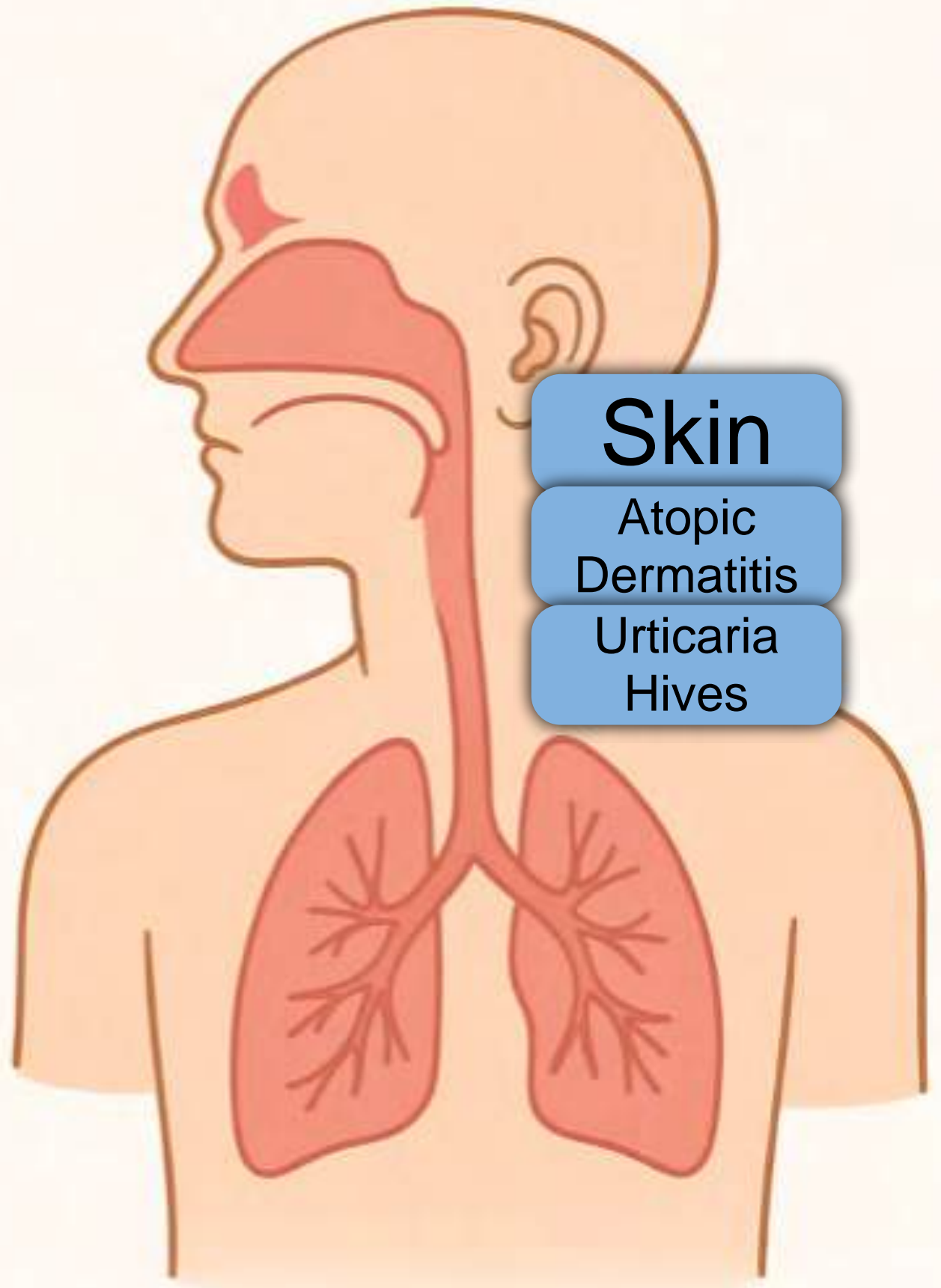
## Oral anti-histamines + Pepcid



## Skin

Atopic  
Dermatitis

Urticaria  
Hives





# Case Summary

- Patient: Angela, 37-year-old yoga instructor
- Eyelid swelling and itchy eyes **after visiting a friend with cats**
- Hives on arms and torso
- Reports mild tearing and conjunctival itch, no discharge
- Using loratadine PRN, feels it's not working
- Symptoms **start ~6 hours post-exposure, last 1–2 days**
- No asthma or systemic symptoms

# Do you love cats?

A. Yes

B. No

C. Prefer not to say

(do not want to upset my significant other)





# Cat allergies

Fel d-I glycoprotein:

Secreted by sebaceous glands

Found in fur, urine, saliva

Can remain airborne for months

10x smaller than pollen

# Cat allergies

amazon  
\$22.99



Roll over image to zoom in



# Cat allergies

Washing/baths only effective for 3 hours

Males neutered much lower (5.46 to 1.28)

HEPA vacuum + HEPA room filtration works, each alone has diminished effect

# Hypoallergenic cats

Breed	Fel d 1	Coat	Notes
Siberian	Lower	Long	Very low Fel d 1
Balinese	Lower	Long	"Hypoallergenic" Siamese
Oriental Shorthair	Lower	Short	Related to Siamese
Russian Blue	Lower	Short	Anecdotal
Devon Rex	Possibly Low	Very Short	Minimal grooming
Cornish Rex	Possibly Low	Down Coat (soft)	Similar to Devon Rex

Beheshti R, Huang P, Le M, Peterson R, Tversky JR. Should the Cat Stay Home? A Guide to Managing Cat Allergies. Allergies. 2025; 5(2):12.



## Hypoallergenic cats

“Fabrics with an average pore size of 6  $\mu\text{m}$  or less blocked cat allergen (Fel d 1)”

Vaughan JW, McLaughlin TE, Perzanowski MS, Platts-Mills TA. Evaluation of materials used for bedding encasement: effect of pore size in blocking cat and dust mite allergen. J Allergy Clin Immunol. 1999 Feb;103(2 Pt 1):227-31. doi: 10.1016/s0091-6749(99)70495-1. PMID: 9949312.

# Hypoallergenic casings

Type	Pore size	Where to Buy
National Allergy	2.6 microns	Amazon
Mission:Allergy	2 microns	Amazon “Dust Mite and Allergen Proof”

Vaughan JW, McLaughlin TE, Perzanowski MS, Platts-Mills TA. Evaluation of materials used for bedding encasement: effect of pore size in blocking cat and dust mite allergen. J Allergy Clin Immunol. 1999 Feb;103(2 Pt 1):227-31. doi: 10.1016/s0091-6749(99)70495-1. PMID: 9949312.



Intervention	Rhinitis Reduction	Asthma Reduction	Allergen Reduction	Notes
Bathing Cat	10-30%	5-20%	25-50%	Lasts few hours
HEPA filters	20-40%	15-30%	50-80%	Combine with HEPA vacuum
HEPA Vacuum	5-15%	5-10%	10-30%	Combine with HEPA filter
Immunotherapy	60-80%	50-80%	N/A	High efficiency
Removing Cat	50-80%	40-60%	90-100% (20 months)	High efficiency Poor compliance
Also recommended: Male neutered, Mattress/pillow				

Beheshti R, Huang P, Le M, Peterson R, Tversky JR. Should the Cat Stay Home? A Guide to Managing Cat Allergies. Allergies. 2025; 5(2):12.

# Cat allergies

Cat food?

“Feeding a diet with anti Fel d1 IgY [anti Fel d1 antibodies] significantly reduced the active Fel d1 on the hair of cats.”

Satyaraj, Ebenezer, et al. "Reduction of active Fel d1 from cats using an antiFel d1 egg IgY antibody." *Immunity, inflammation and disease* 7.2 (2019): 68-73.



# Cat allergies



Winner Cat Care Category. Survey of 40,000 people by Kantar.



# Case Vignette: The Fall Hack Attack



# Case Summary

- Patient: Darius, 33-year-old warehouse manager
- Dry, hacking cough—worse at night
- No fever, chills, or mucus
- Mild runny nose and throat clearing
- No ocular signs or asthma
- Positive allergy history: dust mites, ragweed, cats
- Poor response to OTC cough suppressants

# Case Summary

- Patient: Darius, 33-year-old warehouse manager
- Dry, hacking cough—worse at night
- No fever, chills, or mucus
- Mild runny nose and throat clearing
- No ocular signs or asthma
- Positive allergy history: dust mites, ragweed, cats
- Poor response to OTC cough suppressants



# Allergic cough

# Cough

“with cough, it's an airway itch”

Gibson PG. Cough is an airway itch? Am J Respir Crit Care Med. 2004 Jan 1;169(1):1-2. doi: 10.1164/rccm.2310009. PMID: 14695099.



# Allergic cough

## Treatment of Allergy Cough



Antihistamines



Decongestants



Steroids



Nasal  
rinse/irrigation



Inhale steam



Saline nasal spray



# Allergic cough

“[Anticholinergic Tussin] blocks activity of the sphincter muscle and the ciliary muscle of the lens, affecting accommodation”

-Dharmendra J. Bhoola  
South Africa



Cooper J. Patients need to know about ocular risks related to over-the-counter drugs PCON June 27, 2025



# Nin Jiom



<https://www.amazon.com/NIN-JIOM-NATURAL-Soothing-Respiratory/dp/B001A5Z78O>





**Ocular**

Allergic Conjunctivitis

**Nose**

Allergic Rhinitis

**Throat**

Allergic Cough

**Lungs**

Asthma

**Skin**

Atopic  
Dermatitis

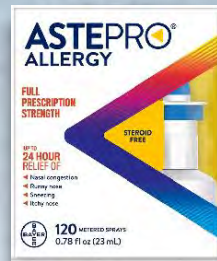
Urticaria  
Hives



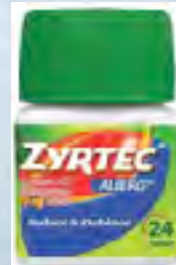
## Saline rinses



## Sprays



## Oral anti-histamines



## Cough suppressants



## Nin Jiom



## Throat

## Allergic Cough



# OTC Toolbox

## Ocular

Topical  
anti-histamines

cyclosporine

Loteprednol

PF Artificial  
tears

## Throat

Cough  
suppressants

Nin Jiom

## Nose

Sprays

Saline rinses

## Lungs

Prescribed  
Inhalers

Primatene mist  
emergency use

## Skin

Topical anti-histamines &  
steroids

Lubrication

Oral anti-histamines &  
Pepcid

## Systemic

Oral  
anti-histamines



# OTC Tips



## Oral anti-histamines



Do: Switch to stronger  
(claritin → zyrtec → xyzal → benadryl)

Don't: Use year round; rotate seasonally



## Sprays



Do: Use anti-histamine and cromolyn  
(if available)

Don't: Use Primatene as 1st line; only  
for emergencies

Do: Make asthma referrals



## Topical anti-histamines



Do: Prescribe with PF artificial  
tears and dry eyes/steroids meds

Avoid drops with strong anti-  
muscarinic dryness effects



## Environmental/animal



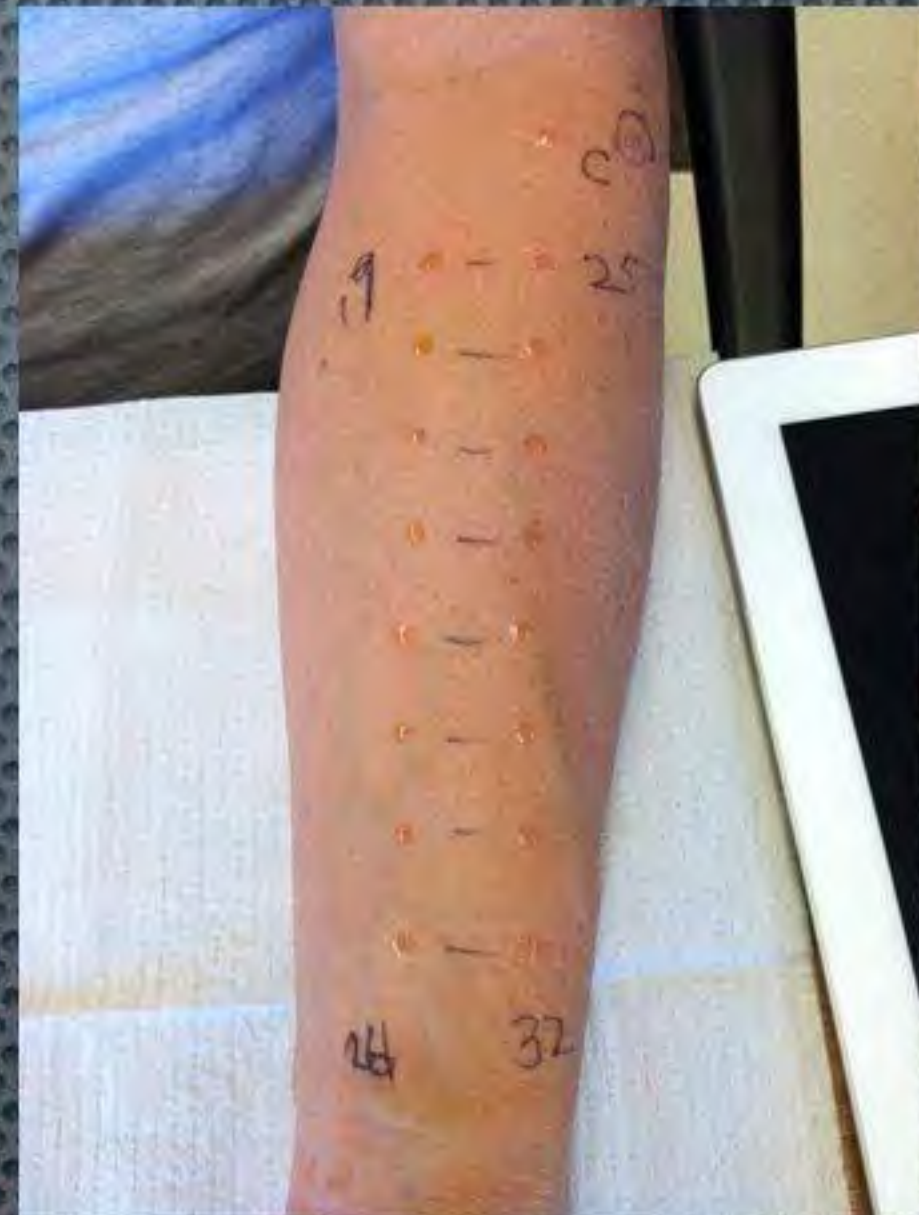
Do: Preload meds

Do: HEPA filter and HEPA vacuum

Don't: ignore red flags  
(asthma, hives)



# Skin prick test





thank you!

milton m. hom  
eyemage@mminternet.com