Developing Pharmacy Care Plans for Patients with Allergic Rhinitis
(Recorded September 29, 2015)

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Disclosures

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Dennis Williams discloses that his spouse is employed by and owns stock in GlaxoSmithKline.

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Learning Level: 2
Fee: There is no fee for this activity

Attendance Code

Self-Assessment Question

1. Which of the following is an allergic trigger for allergic rhinitis symptoms?
   a. Cigarette smoke
   b. Perfume odors
   c. Grass pollens
   d. Latex
Self-Assessment Question

2. When a patient’s specific allergies are documented:
   a. Simple single interventions are effective at controlling symptoms
   b. Desensitization therapy (allergy shots or sublingual tablets) should be used
   c. A multifaceted approach to avoidance is required
   d. Antihistamines are the most effective treatment

Self-Assessment Question

3. There is good evidence to support the use of combinations of allergic rhinitis treatment when single agents alone are ineffective.
   a. True
   b. False

Self-Assessment Question

4. What is the most common adverse effect reported by patients who use second-generation antihistamines?
   a. Cardiac arrhythmias
   b. Urine retention
   c. Sedation
   d. Vision changes
Self-Assessment Question

5. Which of the following techniques should patients be advised about when self-administering a nasal spray?
   a. Direct toward septum for maximal absorption
   b. Depress nasal lacrimal duct to reduce absorption
   c. Avoid shaking product prior to administration
   d. Use contralateral hand when administering to nostril

Learning Objectives

• Discuss signs and symptoms of allergic rhinitis.
• Define trigger control strategies that may help prevent allergic rhinitis symptoms.
• Identify clinical situations that may be managed with non-pharmacologic treatment options.
• Identify clinical situations for which referral to a specialist is appropriate.
• Discuss treatment options for allergic rhinitis with consideration to special populations, including product selection, correct dosing and administration, contraindications, and adverse effects.
• Construct an individualized pharmacy care plan for a patient with allergic rhinitis who has not received relief from intranasal corticosteroids.

Case Study #1

• Dan B is a 48-year-old white man who reports intermittent allergic rhinitis since childhood
• Past skin prick testing confirmed allergy to Kentucky bluegrass and house dust mites
• He endorses symptoms of nasal itching, sneezing, rhinorrhea, and congestion, which are typically worse in the spring
• In the past he had used chlorpheniramine 4 mg and pseudoephedrine 60 mg 2-4 times/day PRN
• He recently began flipping houses and is currently working on remodeling an older home

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Case Study #1

- Dan indicates that he has experienced more problems this year, even after the spring ended.
- He is complaining of frequent symptoms of rhinitis, sneezing, and an itchy nose along with intermittent congestion.
- He has been using his usual therapy but reports often experiencing drowsiness and palpitations, which concern him.

Case Study #2

- Dan is also concerned about his 12 year old daughter, Tracy B, who has had allergic rhinitis for several years and was diagnosed with asthma a year ago.
- Dan asks if allergies caused Tracy’s asthma.
- Her current medications include:
  - Albuterol MDI 2 puffs every 4-6 hours PRN SOB
  - Budesonide 90 mcg 1 puff twice daily
  - OTC cetirizine 5 mg Syrup once daily PRN

Rhinitis

- Inflammation in the nose and associated structures.
**Allergic Rhinitis**

- Most common type of rhinitis
- Immunologically mediated
- Typically associated with atopy
- Type 1 (antigen-antibody) hypersensitivity reaction
- Involves immunoglobulin E (IgE)

**Risk Factors for Developing Allergic Rhinitis**

- Family history
- Formula drinkers
- Maternal smoking when child < 1 year old
- High serum IgE levels
- Food allergies
- Ethnic origin other than white European
- Environmental pollution exposure
- Birth during pollen season
- No older siblings
- Late entry into nursery or preschool
- Exposure to indoor allergens
  - Animal dander
  - Dust mites
Impact of Allergic Rhinitis

- Incidence and prevalence rates difficult to quantify
  - Often undiagnosed
  - Self-treatment is common
- Affects more than 35 million people in the United States
- 5th most chronic illness in the United States

The Allergic Reaction

- Sensitization
- IgE production
- Arming of mast cells
- Release of mediators
- Clinical effects

Time Course of Inflammatory Events in Allergic Rhinitis

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Mechanism of Allergic Reaction in Rhinitis

Allergic Rhinitis

- Negatively impacts
  - Quality of life
  - Work or school performance
  - Productivity
  - Health care costs

- These components are affected because of the morbidity, rather than the mortality, of allergic rhinitis

Common Symptoms of Allergic Rhinitis

- Nose
  - Watery discharge
  - Congestion
  - Sneezing
  - Itching
  - Post-nasal drip
  - Sinus pressure and pain
  - Anosmia
- Throat
  - Pain
  - Hoarseness
  - Itching
- Eyes
  - Itching
  - Redness
  - Swelling
  - "Allergic chiners"
- Ears
  - Pain and pressure
  - Congestion
  - Popping/loss of hearing
  - Itching
- Sleep cycle
  - Mouth breathing
  - Frequent awakenings
  - Fatigue

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Considerations in Classifying Allergic Rhinitis

• Temporal pattern (seasonal, perennial)
• Frequency (intermittent, persistent)
• Severity (mild, moderate, severe)

Current Terminology for Allergic Rhinitis Conditions

• Allergic rhinitis (AR): caused by an IgE-mediated inflammatory response of the nasal mucous membranes after exposure to inhaled allergens. Symptoms include rhinorrhea (anterior or posterior nasal drainage), nasal congestion, nasal itching, and sneezing.
• Seasonal allergic rhinitis (SAR): caused by an IgE-mediated inflammatory response to seasonal allergens. The length of seasonal exposure to these allergens is dependent on geographic location and climatic conditions.
• Perennial allergic rhinitis (PAR): caused by an IgE-mediated inflammatory response to year-round environmental allergens. These may include dust mites, mold, animal allergens, or certain occupational allergens.
• Intermittent allergic rhinitis: caused by an IgE-mediated inflammatory response and characterized by frequency of exposure or symptoms (4 days per week or 4 weeks per year).
• Persistent allergic rhinitis: caused by an IgE-mediated inflammatory response and characterized by persistent symptoms (>4 days per week and >4 weeks per year).
• Episodic allergic rhinitis: caused by an IgE-mediated inflammatory response that can occur if an individual is in contact with an exposure that is not normally a part of the individual’s environment (e.g., a cat at a friend’s house).


<table>
<thead>
<tr>
<th>Intermittent (seasonal)</th>
<th>Persistent (perennial)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Symptoms occur:</td>
<td>Symptoms occur:</td>
</tr>
<tr>
<td>Fewer than 4 days/week</td>
<td>At least 4 days/week</td>
</tr>
<tr>
<td>or fewer than 4 weeks/year</td>
<td>and for at least 4 weeks/year</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mild</th>
<th>Moderate-Severe</th>
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</thead>
<tbody>
<tr>
<td>All of the following:</td>
<td>At least one of the following:</td>
</tr>
<tr>
<td>Normal sleep</td>
<td>Impaired sleep</td>
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<tr>
<td>No impairment of usual daily activities, sports, and leisure</td>
<td>Impairment of daily activities, sports, and leisure</td>
</tr>
<tr>
<td>No interference with work or school</td>
<td>Interference with work or school</td>
</tr>
<tr>
<td>No troublesome symptoms</td>
<td>Troublesome symptoms</td>
</tr>
</tbody>
</table>
Goals for Managing Allergic Rhinitis

- Control symptoms
- Improve quality of life
- Prevent complications
- Avoid exacerbation of comorbidities

General Management Components

- Allergen Avoidance
  - Indicated when possible
  - Safety
  - Effectiveness
  - Easily administered

- Immunotherapy
  - Effectiveness
  - Specialist prescription
  - May alter natural course of the disease

- Patient Education
  - Always indicated

Medication classes

- Decongestant
- Anticholinergic
- Specific immunotherapy
- Anti-IgE
- Mast cell stabilizer
- Medication classes
- Antihistamine
- Intranasal steroid
- Leukotriene modifer
Pharmacist's Role in Allergic Rhinitis Management

<table>
<thead>
<tr>
<th>Treatment Goal</th>
<th>What pharmacists can do to help</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevent and relieve symptoms</td>
<td>Help identify triggers, encourage and educate on allergen testing, recommend trigger avoidance strategies</td>
</tr>
<tr>
<td>Improve QOL</td>
<td>Recommend both OTC and Rx therapies to improve symptom control</td>
</tr>
<tr>
<td>Limit ADRs</td>
<td>Monitor, recommend changes as appropriate, ensure appropriate use – adherence and proper technique</td>
</tr>
<tr>
<td>Avoid excessive cost</td>
<td>Recommend formulary items (lowest tier copay), patient assistance programs, consider OTC cost when recommending</td>
</tr>
</tbody>
</table>

Back to Case Study #1: Dan B

- Remember Dan, our patient with intermittent allergic rhinitis who is now experiencing symptoms from remodeling an older home
- He has known sensitivities to Kentucky bluegrass and house dust mites
- His main complaints now are rhinitis, sneezing, and an itchy nose, with intermittent congestion

Strategies for Dan B

- Advice about allergen avoidance
  - Wear surgical mask when around dust
  - Reduce indoor humidity
  - Replace carpet with linoleum, tile, wood
  - Cover moist surfaces, such as water pipes, with insulation and increase ventilation
- Medication considerations
**Step Therapy Algorithm for Treatment of Allergic Rhinitis***

- **Step 1:** Preferred: Oral or IN AH PIN
  - Alternative: LT antag may be considered

- **Step 2:** Preferred: Daily INS
  - Alternative: Oral AH + oral LTRA (if tolerability or pref issues with IN med)

- **Step 3:** Preferred: Daily INS + IN AH
  - Alternative: INS + oral AH or Oral AH + oral LTRA (if tolerability or pref issues with IN med)

- **Step 4:** Preferred: Daily INS + IN AH
  - Alternative: Omalizumab, Oral steroid burst, Consider oral decongest, brief topical decong, oral AH, LTRA

- **Step 5:** Preferred: Daily INS + IN AH
  - Alternative: Omalizumab, Oral steroid burst, Consider oral decongest, brief topical decong, oral AH, LTRA

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**Dan B Medication Considerations**

- Second-generation antihistamines are recommended over older agents based on equal effectiveness and improved adverse effect profile
- **Choices**
  - Loratadine
  - Desloratadine
  - Cetirizine
  - Levocetirizine
  - Fexofenadine

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**Oral Antihistamines**

**Second Generation**

- Most common class of agents recommended for allergic rhinitis
- Effective for sneezing, rhinorrhea, and itching
- Not effective for nasal congestion
- Most common adverse effect is sedation

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* Based on practical considerations; data supporting practices limited in some situations

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Dan B Medication Considerations

- He experiences congestion intermittently
- Either a topical or oral decongestant can be recommended but should not be used routinely
- If patient continues to experience symptoms, consider switching to intranasal steroid therapy

What About Dan’s Daughter, Tracy?

- 12-year-old girl with allergic rhinitis and asthma
- Treated with budesonide oral inhaler, and PRN albuterol and cetirizine
- Father asks about association between allergies and asthma

Common Comorbidities with Allergic Rhinitis

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Asthma and Allergic Rhinitis

- Often exist as comorbid conditions
- Allergic rhinitis often precedes asthma diagnosis and is a risk factor for asthma
- Prevalence of asthma higher in people with allergic rhinitis versus those without allergic rhinitis
- Allergic rhinitis and asthma are linked by some researchers as “One airway, One disease” but this concept is not universally accepted

Allergic Rhinitis and Asthma Study Results

- Among college students with new onset asthma, 64% reported rhinitis symptoms first and 21% concurrently
- Long-term epidemiological studies report 2 to 3 times increased risk for asthma in allergic rhinitis patients


Allergic Rhinitis and Asthma Possible Mechanisms for Link

- Loss of nasal protective function
  - Congestion leads to mouth breathing and loss of usual maintenance function of nasal breathing
- Progress of inflammation (systemically or contiguously)
  - Spread of numerous inflammatory mediators from upper airway
- Nasal-bronchial reflex
  - Nasal stimulation bronchoconstriction through reflex arc

Allergic Rhinitis and Asthma

- Expect to encounter patients with both conditions
  - Children and adults
- Consider strategies for optimal control of each condition

Allergic Rhinitis and Asthma

Effect of Treating Allergic Rhinitis

- Can reduce asthma symptoms and decrease bronchial hyperresponsiveness
- Most data regarding improved control related to intranasal steroid therapy
- Treatment of allergic rhinitis is not a direct or definitive asthma therapy

Recommendations for Tracy B?

- Assess current asthma control as well as allergic rhinitis control
- Ensure adherence and good inhaler technique
- Review triggers for her symptoms
- Consider whether daily therapy with cetirizine is warranted
Tracy-Allergen Testing?

• Should Tracy be referred for testing to determine the specific sensitivities that are perturbing her allergic rhinitis and asthma control?

Allergy Testing for Allergic Rhinitis

• IgE-specific testing (skin or blood) recommended for patients with a clinical diagnosis who:
  – Do not respond to empiric therapy
  – Do not have a certain diagnosis
  – Will benefit from knowledge about the specific causative agent in order to target therapy


Allergen Testing

• When indicated, an IgE-specific test should be used
• Patients should have history consistent with allergic rhinitis and
  – Skin testing (prick or intradermal) or
  – In vitro (blood) testing for specific IgE (RAST or PRIST)
• Total IgE blood testing not recommended
Case Study #3

- Mindy Z is a 29-year-old woman in her first trimester of pregnancy
- She has a history of seasonal nasal allergies (ragweed) but does not currently require medication and does not plan to use any allergy medication during her pregnancy
- She is worried about her child’s risk of developing allergies especially because she has heard that allergies are on the increase

Hygiene Hypothesis: Increasing Atopy

At birth, T lymphocytes are undifferentiated or of the T,2 type; environmental exposures influence differentiation

Westernized countries
- Small family size
- Urban setting
- High antibiotic use
- Lack of parasitic disease
- Good sanitation

Developing countries
- Large family size
- Rural setting
- Low antibiotic use
- Exposure to parasites
- Unsanitary conditions

Favors T,2 differentiation
- Allergic (rhinitis, asthma, eczema)

Favors T,1 differentiation
- Nonallergic

Hygiene Hypothesis

Developing immune system CD4
- T Cell (undifferentiated)

Innate Immunity
- T helper 1
  - IL-2, IFN-γ, IL-12, TNF-α

Allergic Immunity
- T helper 2
  - IL-4, IL-5, IL-6, IL-10, IL-13

Neutrophils
- IgE production
- Eosinophils

IgE production
- Eosinophils
Advice to Mindy Z

• Several factors may increase risk of developing atopy
• Evidence exists to support strategies to reduce risk

Polling Question

• Which of the following represents advice for Mindy that is based on scientific evidence?

  a. Infant should be tested for allergen sensitivity within the first year of life based on family history
  b. Avoid having house pets until the child is 2 years of age
  c. Breastfeeding for at least the first 3 months
  d. Impermeable covers for mattress and pillows

Prevention Recommendations

Allergic Rhinitis

• Recommended
  — Breastfeeding for at least 3 months irrespective of atopy history in family
  — Avoid exposure to tobacco smoke by pregnant women and children
  — Multifaceted interventions to avoid early life exposure to house dust mites
  — Avoid occupational allergen exposures

• Not Recommended
  — Allergen avoidance not necessary during pregnancy/breastfeeding
  — No specific avoidance to pets at home for infants and young children

Allergic Rhinitis and Its Impact on Asthma (ARIA) Guidelines 2010, World Health Organization (WHO)
Section Summary

• Pharmacists can be helpful in providing information to patients in
  – Identifying symptoms of allergic rhinitis
  – Educating and recommending regarding prevention and treatment
  – Identifying triggers and suggesting avoidance strategies
  – Monitoring for effectiveness and side effects
  – Ensuring proper use of medications
  – Addressing barriers to treatment including costs

Evidence Regarding Allergic Rhinitis Management Recommendations

General Management Components

Allergen Avoidance
Indicated when possible
Pharmacotherapy
Safety
Effectiveness
Easily administered
Immunotherapy
Effectiveness
Specialist prescription
May alter natural course of the disease
Patient Education
Always indicated
Evidence-Based Guidelines

- Numerous guidelines for prevention, diagnosis, and management of allergic rhinitis have been developed over the last 20 years
- More recently, the emphasis (for all guidelines) has been on the availability and quality of the evidence
- Best examples for allergic rhinitis
  - Allergic Rhinitis and its Impact on Asthma (ARIA) 2010
  - American Academy of Otolaryngology-Head and Neck Surgery Foundation 2015

ARIA 2010; WHO; Seidman MD et al. Otolaryngol Head Neck Surg. 2015;152(suppl):S1-S43)

Evidence-Based Guidelines

- The expert panels that developed each of these guidelines considered and ranked the evidence supporting their recommendations
- Recommendations regarding treatment are largely concordant between the two guidelines but there are some differences

Allergen Avoidance Recommendations

- Single interventions for avoidance of exposure to house dust mites are not effective; multifaceted strategies are required
- Avoidance of exposure to indoor mold and animal dander is recommended when sensitivity is present

ARIA Guideline 2010; WHO
**Allergen Avoidance and Environmental Control**

- *May advise* about avoidance of known allergens or environmental controls (e.g., removal of pets, air filtration systems, bed covers, acaricides) in patients with identified allergens known to cause their symptoms

**Medications**

Each guideline considered the following classes of medications as part of the therapeutic armamentarium for allergic rhinitis:

- **Antihistamines**: oral and intranasal
- **Corticosteroids**: intranasal and oral (rarely)
- **Leukotriene modifiers**
- **Decongestants**: oral and intranasal
- **Cromolyn**: intranasal
- **Anticholinergics**: intranasal
- **Targeted therapies**
  - Anti-IgE
  - Immunotherapy: sublingual (SLIT) and subcutaneous (SCIT)
- **Ophthalmic therapies** (antihistamines and cromolyn)

**Medications**

**Guideline Assessment**

- Antihistamines are the most frequently recommended therapies for treating allergic rhinitis
  - Second generation agents are preferred over first generation agents based on improved side effect profile
  - Oral therapies are used more commonly than inhaled therapies
- Intranasal steroids are the most effective therapies for treating allergic rhinitis
### ARIA Recommendations

<table>
<thead>
<tr>
<th>Class</th>
<th>SAR</th>
<th>PAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2nd-Gen Oral Antihistamine</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Intranasal Antihistamine</td>
<td>Yes</td>
<td>No</td>
</tr>
<tr>
<td>Intranasal Steroid</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Leukotriene Modifier</td>
<td>Yes</td>
<td>Yes (Preschool age)</td>
</tr>
<tr>
<td>Cromolyn</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Anticholinergic</td>
<td>No</td>
<td>Yes (Rhinorrhea only)</td>
</tr>
<tr>
<td>SCIT</td>
<td>Yes (House dust)</td>
<td>Yes (House dust)</td>
</tr>
<tr>
<td>SLIT</td>
<td>Yes (Rhinorrhea only)</td>
<td>Yes (House dust)</td>
</tr>
</tbody>
</table>

ARIA 2010; WHO

### ARIA Pharmacotherapy Recommendations

- Oral antihistamines preferred over intranasal antihistamines
  - Adults for SAR and persistent/perennial AR
  - Children for intermittent and persistent AR
- Leukotriene modifiers not recommended for PAR in adults
- Oral antihistamines preferred over leukotriene modifiers
- Intranasal steroids preferred over all other therapies for SAR and PAR

ARIA 2010; WHO

### ARIA Pharmacotherapy Recommendations

- Inhaled decongestants recommended for decongestants (when used for <5 days with other agents)—but not in preschool age
- Oral decongestants are not recommended for regular use in allergic rhinitis
- Intraocular antihistamines or cromolyn are recommended for ocular symptoms of allergic rhinitis

ARIA 2010; WHO

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Otolaryngology Guideline Recommendations

- Categories: Recommendation for or against, and optional considerations
- Recommends against use of leukotriene modifiers as primary therapy
- Recommends use of immunotherapy (SCIT or SLIT) for patients who have inadequate response to pharmacotherapy with or without environmental controls
- Offers option regarding combination therapies if monotherapy is ineffective


Combination Therapies for Allergic Rhinitis

- Most combination studies have yielded negative results, including:
  - Oral antihistamines and leukotriene modifiers
  - Intrasal steroids and oral antihistamines
  - Intrasal steroids and leukotriene modifiers
- Studies of cromolyn with other therapies are generally lacking

Combination Therapy for Allergic Rhinitis

- No benefit
- Evidence of benefit
Clinical Trials for Allergic Rhinitis Therapies

- Challenging based on variable nature of the disease and minimal mortality risk
- Patients have variable symptoms and sensitivities
- Patient lifestyle, geographic locations, and allergen levels can affect response

FDA Guidance: Allergic Rhinitis Study Design

- Studies are challenging due to subjective nature of assessments and spontaneous variability in condition
- Blinding is essential
- Placebo is essential versus positive control equivalence study unless intent is to show new treatment is superior to positive control
- FDA approvals are for SAR and PAR
  - Minimum duration is 2 weeks for SAR and 4 weeks for PAR

Inclusion Criteria

- Subjects should have history consistent with allergic rhinitis and either positive skin test (prick or intradermal) or positive in vitro testing for specific IgE (RAST or PRIST)
- Should be experiencing a minimum threshold of symptoms for treatment studies
- Subjects with asthma (other than intermittent) are generally excluded
Study Design

• SAR
  – Measure pollen counts at each study site
  – Document exposure to relevant allergens during study
  – Report number of rainy days and subject exposure to outdoor air
• PAR
  – Patients may have concomitant SAR so studies should be conducted when seasonal allergens are less abundant

www.fda.gov/cder/guidance/index.htm

Study Environment

• Standard Phase 3 trial with frequent symptom scoring for several days
• Single-dose “day in the park” study with hourly symptom assessments
• Inhalational chamber study with hourly symptom assessments

www.fda.gov/cder/guidance/index.htm

Effectiveness Measures

• Patient- and investigator-rated symptom scores can be used; however, patient-rated scores should be used as the primary measure for effectiveness
• Individual symptoms are evaluated and can be reported as Total nasal symptom score (TNSS)
• Example of commonly used scale (should be validated)
  – 0=absent symptoms (no sign/symptom evident)
  – 1=mild symptoms (sign/symptom clearly present; minimal awareness; easily tolerated)
  – 2=moderate symptoms (definite awareness of sign/symptom that is bothersome but tolerable)
  – 3=severe symptoms (sign/symptom that is hard to tolerate; causes interference with ADL and/or sleeping)

www.fda.gov/cder/guidance/index.htm
Safety Assessments

• When appropriate
  – Assess sedation versus placebo
  – Cardiac effects including QTc effects
  – Drug interaction studies if effects on cytochrome P450

• Specific for intranasal steroids
  – Tests for adrenal function and assessments for glaucoma and cataracts

Section Summary

• Guidelines for managing allergic rhinitis are available
• Emphasis is placed on the evidence supporting recommendations for treatment
• Clinicians should be aware of the quality of evidence and critically evaluate the scientific and clinical literature

Case Study #4

• Pooja K is a 26-year-old female graduate student from India
• Since her arrival in the United States, she reports frequent problems with nasal allergies
• She experiences rhinorrhea, sneezing, and itching in her nose and eyes
• She reports that her symptoms often occur in the evening in her home but has noticed more problems in the fall with ragweed as well
Case Study #4

- Pooja has taken several environmental control actions that she identified from the Internet without noticeable benefit
- She meditates regularly and feels this provides modest, but temporary, relief
- She does not have a pet and avoids friends who have them; she often wears a mask when outdoors
- She has started using butterbur (which was recommended by a friend) but can tell no difference
- The patient is not averse to using medication but prefers to try more traditional therapies

General Guidance on Environmental Controls

- Dust mite interventions
  - Impermeable encasings for pillows and mattresses
  - Wash linens in hot water
  - HEPA filtration
- Animal allergens
  - Keep outdoors and out of bedroom
  - Similar interventions as with dust mites
- Roach control
  - Integrated pest management
  - Clean up food, spills, trash, leaks
- Mold and mildew interventions
  - Air conditioning
  - Avoid humidifiers
  - Repair pipes and leaks
- Second-hand smoke exposure
- Air pollution

Alternative Therapies

- Yoga
- Massage
- Acupuncture
- Herbas
  - Echinacea
  - Butterbur
  - Biminne
  - Chinese herbal mix
  - Spirulina
- Camphor
- Menthol
- Intranasal zinc
- Neti pot
- Homeopathy
ARIA Pharmacotherapy
Complementary and Alternative Therapies

• No evidence to support use of:
  – Homeopathy
  – Acupuncture
  – Butterbur
  – Any herbal therapy
• Note: 2015 Otolaryngology guidelines suggest that acupuncture is an *optional* consideration

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Case Study #5

• Gary has experienced increased symptoms of rhinorrhea, sneezing, and nasal congestion recently
  – His mom feels this is associated with various blooming grasses and trees
• He also has required albuterol more frequently (3 to 4 times weekly) and an occasional nighttime awakening
• Mom insists that Gary is adherent with his asthma inhaler

Polling Question

Which of the following is most appropriate to recommend for Gary at this point?

a. Add an oral decongestant daily to his regimen  
b. Add a second oral antihistamine agent  
c. Initiate a leukotriene modifier  
d. Change cetirizine therapy to an intranasal steroid

Case Study #5

Recommendations

• Trigger avoidance can be difficult when multiple allergens are present
• Poorly controlled allergic rhinitis can disturb asthma control
• Asthma inhaler technique should be assessed
• Change to intranasal steroid may be warranted, which can help with congestion
• Patient can be counseled regarding mouth rinsing with oral inhaler and monitored for reduction in growth velocity

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Corticosteroids
Mechanism of Action

Intranasal steroids for allergic rhinitis

<table>
<thead>
<tr>
<th>Generic name</th>
<th>Brand name</th>
<th>Pediatric use</th>
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<tbody>
<tr>
<td>Beclomethasone</td>
<td>Beconase AQ,</td>
<td>4 and up</td>
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<td>Qicaid</td>
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</tr>
<tr>
<td>Ciclesonide</td>
<td>Omnaris</td>
<td>6 and up</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Zetonna</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flunisolide</td>
<td></td>
<td>6 and up</td>
<td></td>
</tr>
<tr>
<td>Fluticasone furoate</td>
<td>Flonase</td>
<td>4 and up</td>
<td></td>
</tr>
<tr>
<td>Fluticasone</td>
<td>Veramyst</td>
<td>4 and up</td>
<td>OTC</td>
</tr>
<tr>
<td>propionate</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mometasone</td>
<td>Nasonex</td>
<td>2 and up</td>
<td>OTC</td>
</tr>
<tr>
<td>Tramcinolone</td>
<td>Nasonex Allergy</td>
<td>2 and up</td>
<td>OTC</td>
</tr>
<tr>
<td>Budesonide</td>
<td>Rhinocort Aqua</td>
<td>6 and up</td>
<td></td>
</tr>
</tbody>
</table>

Intranasal Steroid Inhaler Technique

- Prime device according to the manufacturer’s instructions
- Shake before use
- Blow nose before spraying if mucus present
- Tilt head slightly forward and place nozzle into nostril
- Use contralateral hand (left hand to right nostril; right hand to left nostril)
- Spray dose while gently sniffing
- Wipe excess spray from nose if needed

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Case Study #6

- Minnie P. is a 57-year-old woman who reports lifelong problems with nasal allergies; she is sensitive (by history) to house dust and animal dander
- For the past several years, the patient reports good control of her symptoms with fexofenadine, first by prescription, then as an OTC agent

Case Study #6

- Recently, Minnie reports an increase in her usual allergy symptoms
- In addition, she reports more problems with congestion and a loss of smell and taste
- The patient believes that she has become more sensitive to certain smells and odors, including perfumes and certain foods

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Common Rhinitis Condition Categorization


Rhinitis Diagnostic Worksheet

Nonallergic-Mixed-Allergic

<table>
<thead>
<tr>
<th>Supports Vasomotor (nonallergic) Rhinitis</th>
<th>Supports Allergic Rhinitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Persistent congestion and rhinorrhea without itch/sneeze</td>
<td>Itchy nose (&quot;nasal salute&quot;)</td>
</tr>
<tr>
<td>Poor response to oral antihistamines</td>
<td>Seasonal symptoms</td>
</tr>
<tr>
<td>Symptoms exacerbated by:</td>
<td>Itchy eye/eye rubbing</td>
</tr>
<tr>
<td>– Non allergic changes</td>
<td>Clear rhinorrhea</td>
</tr>
<tr>
<td>– Periocular irritation</td>
<td>Family history of allergic rhinitis</td>
</tr>
<tr>
<td>– Sneezing</td>
<td>Eczema</td>
</tr>
<tr>
<td>– Late age of onset</td>
<td>Food allergy</td>
</tr>
<tr>
<td>– Absence of cat/dog/pet trigger</td>
<td></td>
</tr>
</tbody>
</table>

Case Study #6

Recommendations

• Recognize that all rhinitis triggers are not allergic
• New symptoms and triggers may represent nonallergic basis
• If nonallergic cause, oral antihistamines are generally not effective
• Intranasal steroids are treatment of choice
• Intranasal antihistamine may be an option
Case Study #7

- Jason R is a 30-year-old male accountant who has had allergic rhinitis since childhood
- He reports symptoms have worsened since moving for a new job to the southeastern United States
- Through allergy intradermal skin testing, he has known sensitivities to house dust, Kentucky bluegrass, and Timothy grass
- Jason states that his nose runs constantly and he often has multiple sneezing episodes

Case Study #7

- Jason reports receiving allergy shots as a teenager, which helped some but he discontinued them because of inconvenience
- He has used an intranasal steroid for several years and now uses an OTC
- He has added oral fexofenadine 180 mg daily but is frustrated with his continuing symptoms
- The patient is considering whether he should start allergy shots again

Step Therapy Algorithm for Treatment of Allergic Rhinitis*

- Provide education and allergen/irritant avoidance strategies
- Step 1: Preferred: Oral or IN PRN
  - Step 2: Preferred: Daily oral or IN AH
    - Alternative: LT antag may be considered
- Step 3: Preferred: Daily INS
  - Alternative: Oral AH + oral LTRA (if tolerability or pref issues with IN med)
- Step 4: Preferred: Daily INS + IN AH
  - Alternative: Omalizumab, Oral steroid burst, Consider oral decongest, topical desen, oral AH
- Step 5: Preferred: Daily INS + IN AH
  - Alternative: Omalizumab, Oral steroid burst, Consider oral decongest, topical desen, oral AH

* Based on practical considerations; data supporting practices limited in some situations

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Allergic Rhinitis and Asthma Immunotherapy

- Immunotherapy beneficial for allergic rhinitis
- Limited data available regarding role of immunotherapy for:
  - Preventing asthma development
  - Improving asthma control when present

Otolaryngology Guideline Recommendations

- Recommends use of immunotherapy (subcutaneous or sublingual) for patients who have inadequate response to pharmacotherapy with or without environmental controls

Immunotherapy

- Refer patient to specialist
- Subcutaneous immunotherapy (SCIT)
  - Limited by delayed onset of benefit (6-12 months)
  - Risk of allergic reactions, including anaphylaxis
- Sublingual immunotherapy (SLIT)
  - Emerging as beneficial option
  - Usually requires treatment initiation 3-4 months prior to allergen exposure
  - May have limited effectiveness if multiple allergens present
  - Risk of allergic reactions, including anaphylaxis

Seidman MD et al. Otolaryngol Head Neck Surg. 2015;152(suppl:S1-S43)

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Immunotherapy

<table>
<thead>
<tr>
<th>Drug Name</th>
<th>Allergen Targeted</th>
<th>Patient Ages Approved (in years)</th>
<th>When to Initiate Treatment in Relation to Expected Onset of Exposure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ragwitek</td>
<td>Ragweed pollen</td>
<td>18-65</td>
<td>12 weeks</td>
</tr>
<tr>
<td>Oralair</td>
<td>Mixed grass: sweet vernal, orchard, perennial rye, Timothy, and Kentucky bluegrass</td>
<td>10-65</td>
<td>4 months</td>
</tr>
<tr>
<td>Grastek</td>
<td>Timothy grass</td>
<td>5-65</td>
<td>12 weeks</td>
</tr>
</tbody>
</table>

Sublingual immunotherapy

Education Points

- Place under tongue 1-2 minutes before swallowing
- No titration schedule
- First dose – provider office
- Requires daily dosing
- Provide epinephrine for possible reactions and instruct regarding use
- Duration of therapy?

Available Forms of Injectable Epinephrine

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Dosage Form and Strength</th>
<th>Adult Dose</th>
<th>Pediatric Dose</th>
</tr>
</thead>
<tbody>
<tr>
<td>EpiPen Jr 2-Pak</td>
<td>Solution Auto-injector 0.15 mg/0.3 mL</td>
<td>Dosage based on patient body weight: 15-29 kg: 0.15 mg IM or SC; ≥30 kg: 0.3 mg IM or SC</td>
<td></td>
</tr>
<tr>
<td>Adrenaclick Auvi-Q</td>
<td>Solution Auto-injector 0.3 mg/0.3 mL</td>
<td>0.3 mg IM or SC into the anterolateral aspect of the thigh</td>
<td></td>
</tr>
</tbody>
</table>
Summary

• Impact of allergic rhinitis is significant because of its prevalence and chronic or recurring symptoms
• Numerous opportunities for pharmacists to assist patients with allergic rhinitis symptoms
  – OTC therapies are available
  – Referral to specialist based on symptoms and response
  – Ensuring proper use of medication
  – Monitoring for effectiveness and safety
• Collaborating with other clinicians when targeted therapies are used (immunotherapy or anti-IgE)

Self-Assessment Question

1. Which of the following is an allergic trigger for allergic rhinitis symptoms?
   a. Cigarette smoke
   b. Perfume odors
   c. Grass pollens
   d. Latex

Self-Assessment Question

2. When a patient’s specific allergies are documented:
   a. Simple, single interventions are effective at controlling symptoms
   b. Desensitization therapy (allergy shots or sublingual tablets) should be used
   c. A multifaceted approach to avoidance is required
   d. Antihistamines are the most effective treatment
Self-Assessment Question

3. There is good evidence to support the use of combinations of allergic rhinitis treatment when single agents alone are ineffective.
   
   a. True  
   b. False

Self-Assessment Question

4. What is the most common adverse effect reported by patients who use second-generation antihistamines?
   
   a. Cardiac arrhythmias  
   b. Urine retention  
   c. Sedation  
   d. Vision changes

Self-Assessment Question

5. Which of the following techniques should patients be advised to use when self-administering a nasal spray?
   
   a. Direct toward septum for maximal absorption  
   b. Depress nasal lacrimal duct to reduce absorption  
   c. Avoid shaking product prior to administration  
   d. Use contralateral hand when administering to nostril
Questions and Comments

How to Obtain CPE Credit

- Please visit: [www.pharmacist.com/live-activities](http://www.pharmacist.com/live-activities) and select the Claim Credit link for this activity.
- You will need a pharmacist.com username and password.
- Select Enroll Now or Add to Cart from the left navigation and successfully complete the Assessment and Evaluation to claim credit.
- You will need to provide your NABP e-profile ID number to access your statement of credit.
- You must claim credit by October 1, 2017. No credit will be awarded after this date.