Component 2: Control of Factors Contributing to Asthma Severity

- Assess exposure and sensitivity to:
  - Inhalant allergens
  - Occupational exposures
  - Irritants:
    - Indoor air (including tobacco smoke)
    - Air pollution
Component 2: Control of Factors Contributing to Asthma Severity
(continued)

- Provide written and verbal instructions for reducing exposures/controlling precipitants (i.e., environmental control)
Assess contribution of other factors:
  - Rhinitis/sinusitis
  - Gastroesophageal reflux
  - Drugs (NSAIDs, beta-blockers)
  - Viral respiratory infections
  - Sulfite sensitivity
Strong Association Between Asthma and Sensitization to Allergens

- Genetically susceptible populations who are sensitized to house-dust mite, animal dander, cockroach, and *Alternaria* are at risk for developing asthma.
- Sensitization to pollens carries less risk for asthma.
Strong Association Between Asthma and Sensitization to Allergens (continued)

- Importance of inhalant sensitivity declines with advancing age.
- Exposure to seasonal outdoor fungal spores and indoor allergens has been implicated in fatal asthma exacerbations.
- Allergen exposure must be considered in the treatment of asthma.
In house-dust mite-sensitive patients, reduction of exposure has:

- Reduced:
  - Asthma symptoms
  - Evidence of airway inflammation
  - Nonspecific bronchial hyperresponsiveness

- Improved:
  - Pulmonary function
Approach to the Identification and Control of Inhalant Allergens

- Determine relevant exposures
- Assess sensitivity to:
  - Seasonal allergens by history
  - Perennial allergens by history, and when necessary, skin or in vitro testing
- Assess significance of positive tests in context of medical history
About 80% of Americans are exposed to house-dust mites.

About 60% of Americans are exposed to cats or dogs.

Cockroaches are a major allergen in inner cities.

Sensitivity usually cannot be determined by history alone.
Teach Patients To Reduce Exposure to Their Inhalant Allergens

Animal Dander
- Remove pet from house (ideal)
- Keep animal out of patient’s bedroom (at a minimum)
- Seal or put a filter on air ducts that lead to bedroom
Teach Patients To Reduce Exposure to Their Inhalant Allergens

House-Dust Mites

**Essential:**
- Encase mattress in an allergen-impermeable cover
- Encase pillow in an allergen-impermeable cover or wash weekly
- Wash sheets and blankets in hot water weekly (≥130°F is necessary for killing mites)
Teach Patients To Reduce Exposure to Their Inhalant Allergens (continued)

House-Dust Mites

Desirable:

- Reduce indoor humidity to less than 50%
- Remove carpets from the bedroom
- Avoid sleeping or lying on upholstered furniture
- Remove carpets laid on concrete
- Routine use of chemicals to kill house-dust mites and to denature the antigen not recommended
Teach Patients To Reduce Exposure to Their Inhalant Allergens (continued)

Cockroaches

- Use poison bait or traps to control
- Do not leave food or garbage exposed
Teach Patients To Reduce Exposure to Their Inhalant Allergens (continued)

Pollens (from trees, grass, or weeds) and outdoor molds

- During their outdoor allergy season(s), adults should stay indoors with windows closed, especially in the afternoon.
- Air conditioning allows windows to remain closed and reduces indoor humidity.
Teach Patients To Reduce Exposure to Their Inhalant Allergens (continued)

Indoor mold

- Fix all leaks and eliminate water sources associated with mold growth
- Clean moldy surfaces
- Consider reducing indoor humidity to less than 50%
Significant Inhalant Allergens: Additional Considerations

- Air conditioning allows windows to remain closed and reduces indoor humidity.
- Humidifiers and evaporative coolers are not recommended.
Recommendations Regarding Allergen Immunotherapy

- Consider allergen immunotherapy for asthma patients when:
  - Clear relationship exists between symptoms and unavoidable exposure
  - Symptoms are prolonged or perennial
  - Pharmacotherapy is difficult or expensive because:
    - Medication is ineffective,
    - Multiple medications are required,
    - Patient does not accept medication, or
    - Strong rhinitis component
Work-Aggravated and Occupational Asthma: Evaluation

Recognize the potential for workplace-related symptoms:

- Sensitizers (e.g., isocyanates, plant or animal products)
- Irritants or physical stimuli (e.g., cold/heat, dust, humidity)
- Coworkers have similar symptoms
Recognize patterns of symptoms in relation to work exposures:

- Improvement during vacations or days off (may take a week or more)
- Symptoms may be immediate (<1 hour), delayed (most commonly, 2 to 8 hours after exposure), or nocturnal
- Initial symptoms may occur after high-level exposure (e.g., spill)
Document work-related airflow limitation

- Serial charting for 2 to 3 weeks (2 weeks at work and up to 1 week off work as needed to identify or exclude work-related changes in peak expiratory flow):
  - Record when symptoms and exposures occur
  - Record when a bronchodilator is used
  - Measure and record peak flow every 2 hours while awake

- Immunologic tests

- Refer for further confirmatory evaluation (e.g., bronchial challenges)
Work-Aggravated and Occupational Asthma: Management

- For work-aggravated asthma, discuss:
  - Avoidance
  - Ventilation
  - Respiration protection
  - Tobacco-free environment

- For occupationally induced asthma, recommend:
  - Complete cessation of exposure to agent
Reduce Irritant Exposure

**Tobacco Smoke**

- Advise patient and others in home who smoke to stop or to smoke outside
- Discuss ways to reduce exposure from day care, workplace, and other settings
Reduce Irritant Exposure (continued)

Indoor/Outdoor Pollutants and Irritants

Discuss ways to reduce exposure to:
- Wood-burning stoves or fireplaces
- Unvented stoves or heaters
- Outdoor pollutants (e.g., avoid outdoor exercise during high-pollution days)
- Other irritants (e.g., perfumes, cleaning agents, sprays)
Control Other Factors That Can Influence Asthma Severity

- Rhinitis
  - Intranasal corticosteroids are most effective
- Sinusitis
  - Promote drainage; antibiotics for complicating acute bacterial infection
- Gastroesophageal reflux
  - Medications; no food before bedtime; elevate head of bed
- Influenza vaccine annually
Control Other Factors That Can Influence Asthma Severity

(continued)

- Viral infections
  - Annual influenza vaccination

- Aspirin/nonsteroidal anti-inflammatory drugs (NSAIDs)
  - Ask adult patients about sensitivity
  - Counsel avoidance for those with sensitivity, severe asthma, or nasal polyps
Control Other Factors That Can Influence Asthma Severity (continued)

- Sulfite-containing foods/beverages
  - All patients should avoid

- Non-selective (especially) beta-blockers
  - All patients should avoid