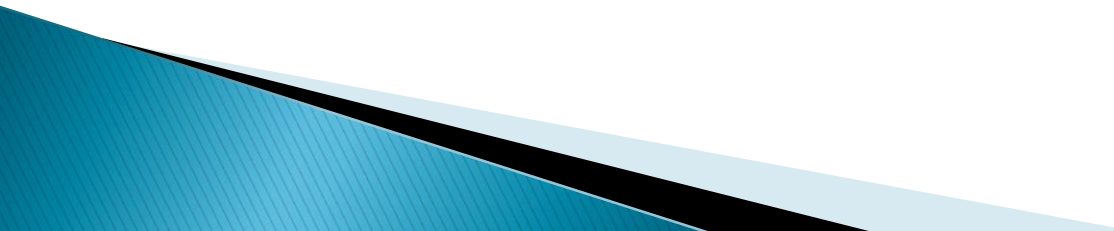


Asthma Update 2015: Has Anything Changed?


Sheri Stensland, PharmD, AE-C, FAPhA
Associate Professor of Pharmacy Practice
Midwestern University/Walgreens

Conflict of Interest/Disclosure

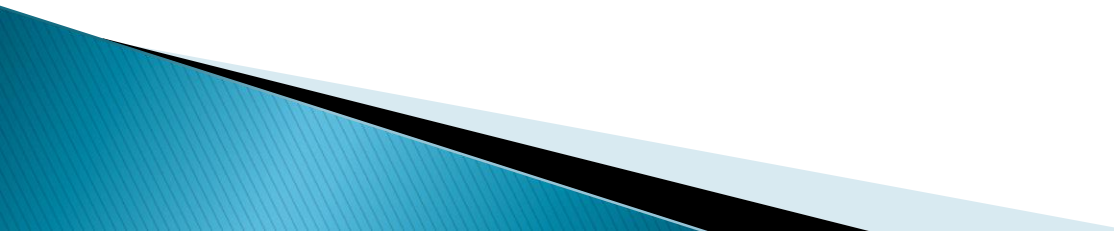
Sheri Stensland declares no conflicts of interest, real or apparent, and no financial interests in any company, product, or service mentioned in this program, including grants, employment, gifts, stock holdings, and honoraria.



Pharmacist Objectives

- ▶ Discuss the pathophysiology, symptoms and goals of asthma treatment
 - ▶ Compare the NHLBI and GINA asthma guidelines
 - ▶ Demonstrate the use of the soft-mist inhaler
 - ▶ Explain the asthma-COPD overlap syndrome (ACOS)
- 

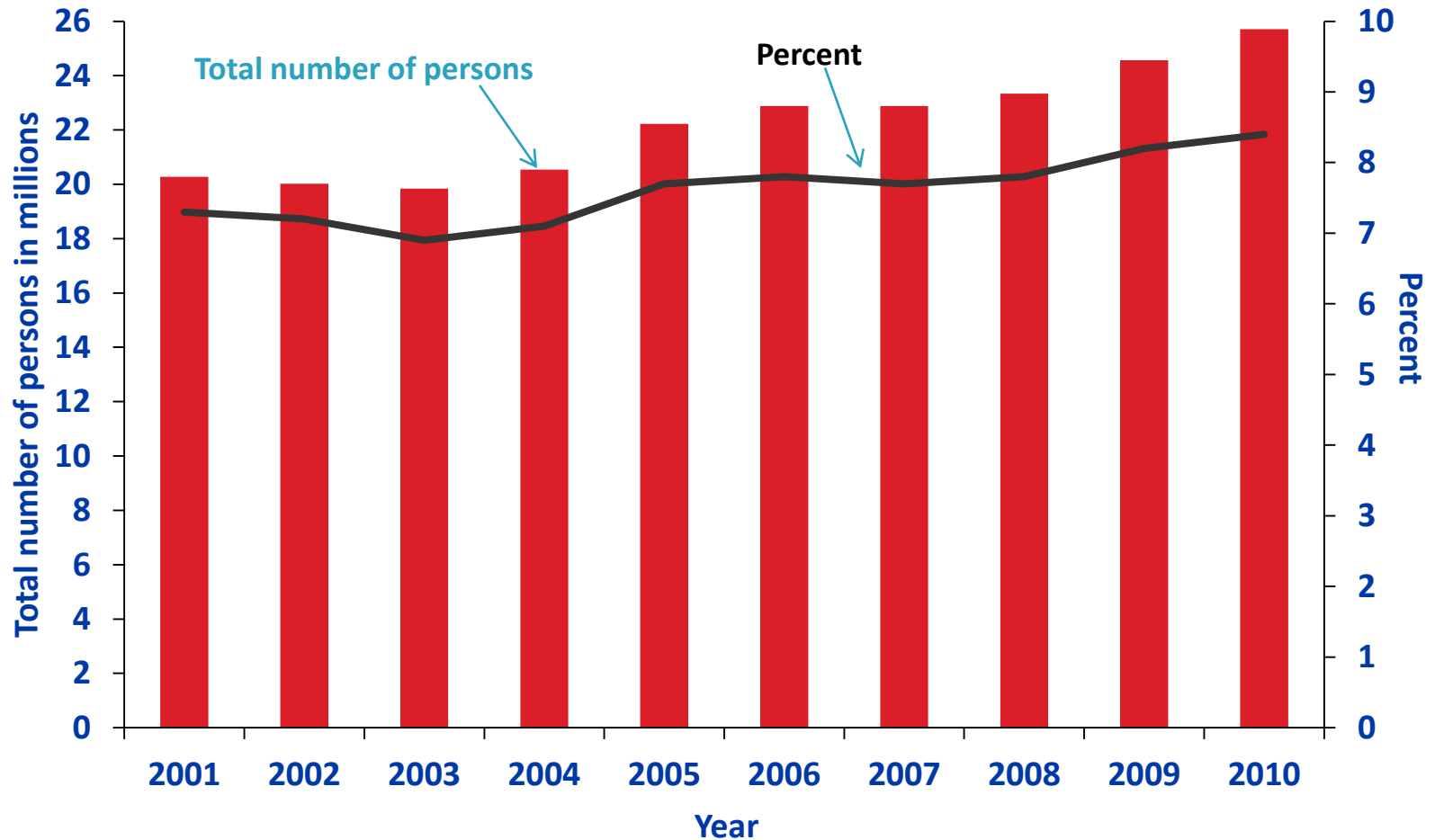
Pharmacy Technician Objectives

- ▶ Discuss the pathophysiology, symptoms and goals of asthma treatment
 - ▶ Demonstrate the use of a soft-mist inhaler
 - ▶ Describe the asthma-COPD overlap syndrome (ACOS)
- 

Asthma Definition

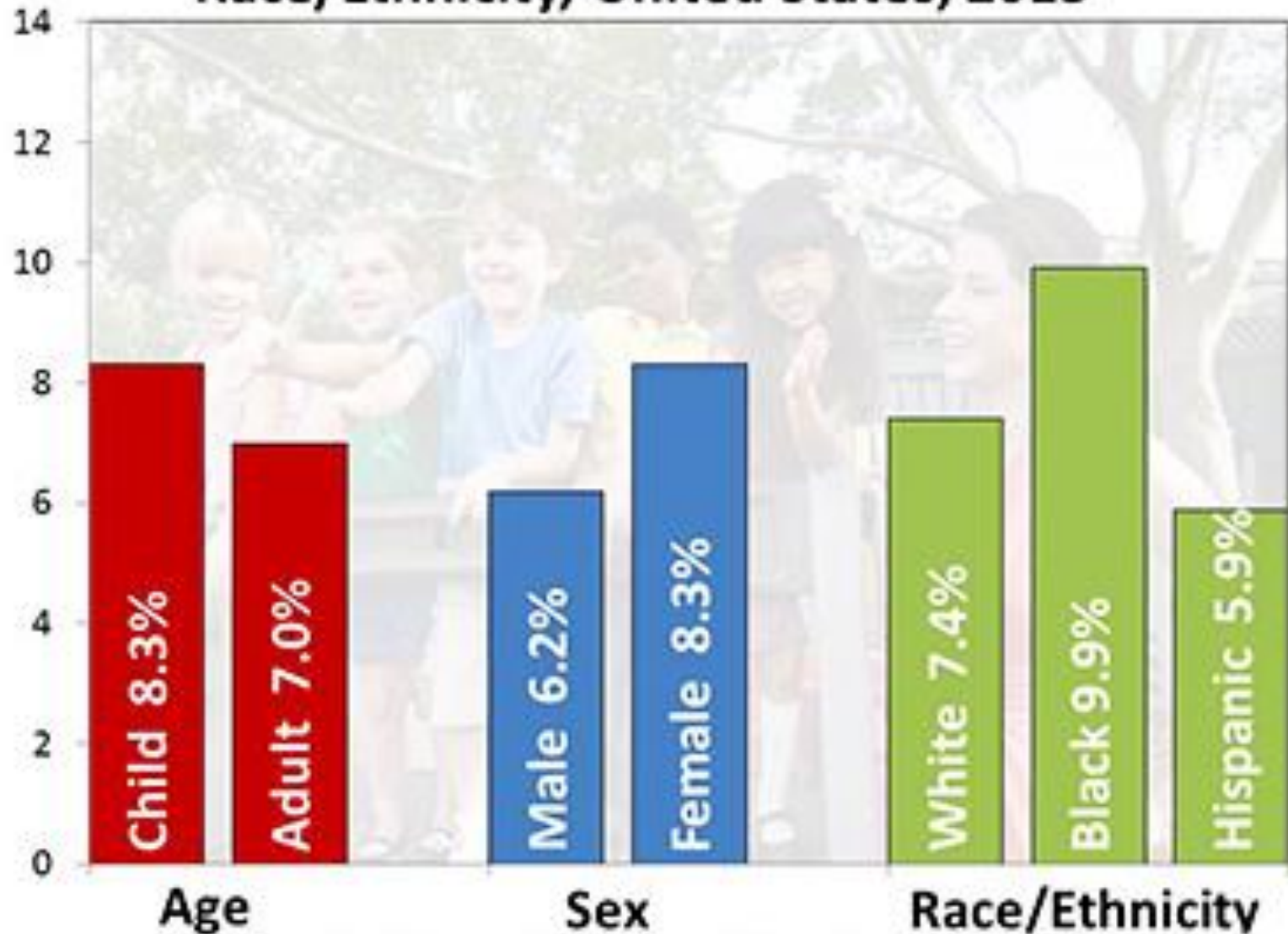
- ▶ Chronic inflammatory disorder of the lungs that is *reversible*
- ▶ Associated with symptoms of
 - Wheezing
 - Coughing
 - Chest tightness
 - Shortness of breath
- ▶ Nighttime/early morning awakenings often occur with the above symptoms

Current Asthma Prevalence: United States, 2001-2010



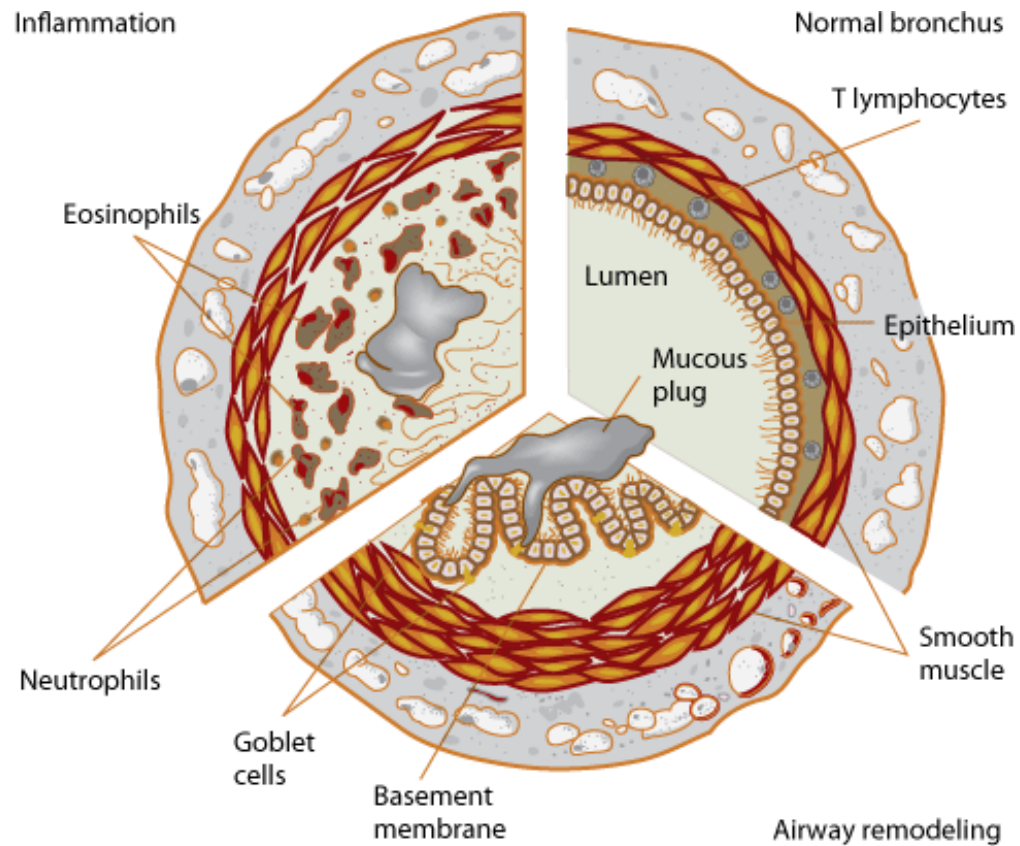
One in 12 people (about 26 million, or 8% of the U.S. population) had asthma in 2010, compared with 1 in 14 (about 20 million, or 7%) in 2001.

Current Asthma Prevalence Percents by Age, Sex, and Race/Ethnicity, United States, 2013



Source: National Health Interview Survey, National Center for Health Statistics, Centers for Disease Control and Prevention

Pathophysiology

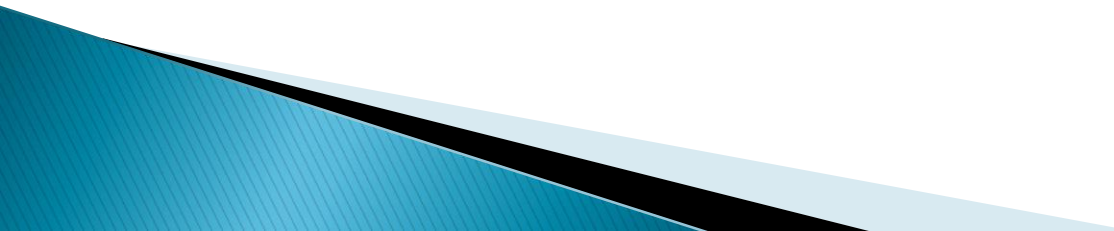


Source: DiPiro JT, Talbert RL, Yee GC, Matzke GR, Wells BG, Posey LM: *Pharmacotherapy: A Pathophysiologic Approach, 8th Edition*: www.accesspharmacy.com

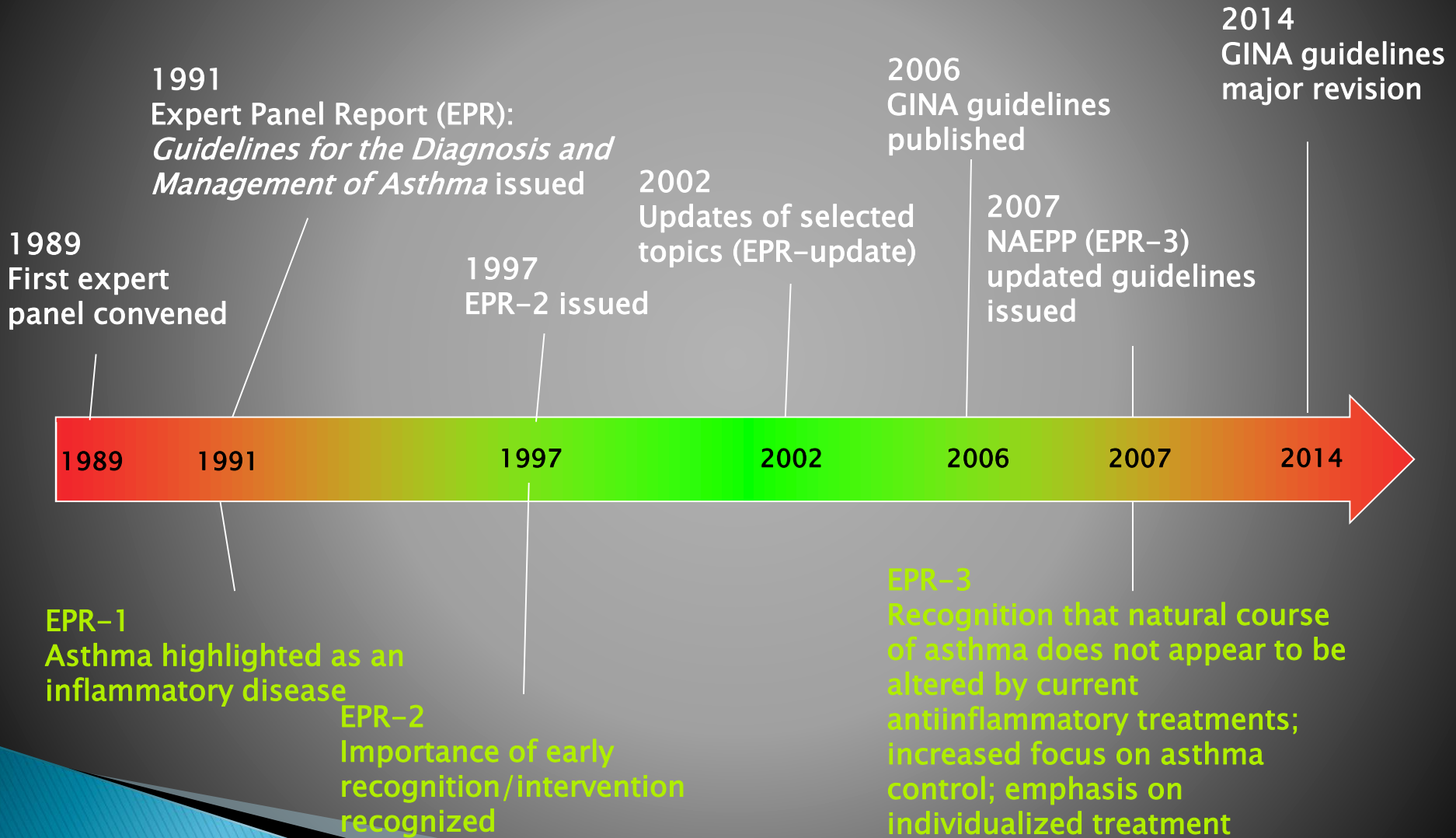
Copyright © The McGraw-Hill Companies, Inc. All rights reserved.

NHLBI Guidelines Expert Panel Report – 3

Goals of Treatment

- ▶ No missed days from school or work
 - ▶ No sleep disruption
 - ▶ Maintain normal activities
 - ▶ No (or minimal) need for ER visits or hospitalizations (decrease healthcare utilization)
 - ▶ Normal or near-normal lung function
- 

Timeline of the EPR Guidelines



Treatment Pathways

Goals of asthma therapy

- Reduce Impairment
 - Prevent chronic and troublesome symptoms
 - Maintain “normal” pulmonary function and activity levels
 - Meet patients’ and families’ expectations and satisfaction with asthma care
- ▶ Reduce Risk
 - Prevent recurrent exacerbations and minimize the need for ER visits or hospitalizations
 - Provide optimal pharmacotherapy with minimal adverse effects
 - Minimize ER visits and hospitalizations



Pharmacotherapy – Step 1

CLASSIFYING ASTHMA SEVERITY AND INITIATING TREATMENT IN YOUTHS ≥ 12 YEARS OF AGE AND ADULTS

- ▶ Utilize chart to determine classification
 - If any discrepancy occurs between parameters ALWAYS go to the higher level
- ▶ Chart indicates step of therapy to initiate

Components of Severity		Classification of Asthma Severity (≥ 12 years of age)			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment	Symptoms	≤2 days/week	>2 days/week But not daily	Daily	Throughout the day
	Nighttime awakenings	≤2x/month	3-4x/month	>1x/weekly but not nightly	Often 7x/week
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week	>2 days/week but not >1x daily	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung Function	*Normal FEV ₁ between exacerbations *FEV ₁ >80% predicted *FEV ₁ /FVC normal	*FEV ₁ = >80% predicted *FEV ₁ /FVC > 80%	*FEV ₁ =60- but < 80% predicted *FEV ₁ /FVC reduced 5%	*FEV ₁ <60% predicted *FEV ₁ /FVC reduced 5%
Risk	Exacerbations (consider frequency and severity)	0-2/year	>2/year	 Frequency and severity may fluctuate over time for patients in any severity category	
Recommended Step for Initiating Therapy (See figure 4-5 for treatment steps)		Step 1	Step 2	Step 3	Step 4 or 5, And consider short course of systemic oral corticosteroids
		In 2-6 weeks, evaluate level of asthma control that is achieved, and adjust therapy accordingly.			
Notes <ul style="list-style-type: none"> The stepwise approach is meant to assist, not replace, the clinical decision making required to meet individual patients needs. Level of severity is determined by both impairment and risk. Assess impairment domain by patient's/caregiver's recall of previous 2-4 weeks and spirometry. Assign severity to the most severe category in which any feature occurs. Exacerbation is defined as an acute episode of signs and symptoms requiring oral systemic corticosteroids. More than two exacerbations/year indicate persistent asthma. There are no data to correspond frequencies of exacerbations with different severity categories within the classification of persistent asthma. In general, more frequent and intense (e.g., requiring urgent, unscheduled care, hospitalization, or intensive care unit admission) exacerbations indicate greater underlying disease severity. 					

Pharmacotherapy – Step 2

▶ Create Medication Plan

- Remember to take any patient specific issues into account (e.g. pregnancy)

STEPWISE APPROACH FOR MANAGING ASTHMA IN YOUTHS ≥ 12 YEARS OF AGE AND ADULTS

Persistent Asthma: Daily Medication					
Intermittent Asthma	Consult with asthma specialist if step 4 care or higher is required. Consider consultation at step 3.				
Step 1 <i>Preferred:</i> SABA PRN	<i>Alternative:</i> Cromolyn, Nedocromil, LTRA or Theophylline	Step 2 <i>Preferred:</i> Low dose ICS	OR Low dose ICS + LABA	Step 3 <i>Preferred:</i> Medium dose ICS	Step 4 <i>Preferred:</i> Medium dose ICS+ LABA
			<i>Alternative:</i> Low-dose ICS + either LTRA, Theophylline, or Zileuton	<i>Alternative:</i> Medium dose ICS+either LTRA, Theophylline or Zileuton	Step 5 <i>Preferred:</i> High dose ICS + LABA
				AND Omalizumab may be considered for patients who have allergies	Step 6 <i>Preferred:</i> High dose ICS + LABA + oral corticosteroid
				AND Omalizumab may be considered for patients who have allergies	AND Omalizumab may be considered for patients who have allergies
Patient Education and Environmental Control at Each Step					
Quick Relief Medication for All Patients					
<ul style="list-style-type: none"> • SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. Short course of systemic oral corticosteroids may be needed. • Use of beta₂-agonist >2 days a week for symptom control (not prevention of EIB) indicates inadequate control and the need to step up treatment 					
<p>Key: ICS, inhaled corticosteroid; LABA, inhaled long acting beta₂ agonist, LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta₂ agonist</p> <p>Note:</p> <ul style="list-style-type: none"> • The stepwise approach is meant to assist, not replace, the clinical decision making required to meet individual patient needs. • If alternative treatment is used and response is inadequate, discontinue it and use the preferred treatment before stepping up. • Zileuton is a less desirable alternative due to limited studies as adjunctive therapy and the need to monitor liver function. Theophylline requires monitoring of serum concentration levels. • In step 6, before oral corticosteroids are introduced, a trial of high-dose ICS + LABA+either LTRA, theophylline, or zileuton may be considered, although this approach has not been studied in clinical trials. 					



Step up if needed
(first, check adherence, environmental control and comorbid conditions)

Assess Control

Step down in possible
(and asthma is well controlled at least 3 months)



Pharmacotherapy – Step 3

- ▶ Determine current level of control
 - This step is for “returning patients”
 - Utilizes either the ATAQ or ACT
- ▶ Place information into chart to help determine level of control and changes in therapy

ASTHMA THERAPY ASSESSMENT QUESTIONNAIRE (ATAQ)

1. In the past 4 weeks did you miss any work, school, or normal daily activities because of your asthma? (1 point for Yes)
2. In the past 4 weeks did you wake up at night because of your asthma? (1 point for yes)
3. Do you believe your asthma was well-controlled in the past 4 weeks? (1 point for No)
4. Do you use an inhaler for quick relief from asthma symptoms? If yes, what is the highest number of puffs in one day you took of this inhaler? (1 point for more than 12)

Total points = 0-4, with more points indicating more control problems.

Assessing Level of Control and Change in Therapy

Components of Control		Classification of Asthma Control (≥ 12 years)		
		Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment	Symptoms	≤ 2 days/week	> 2 days/week	Throughout the day
	Nighttime awakenings	≤ 2 x/month	1-3 /month	> 4 x/week
	Interference with normal activity	None	Some limitation	Extremely limited
	Short-acting β_2 -agonist use for symptom control (not prevention of EIB)	≤ 2 days/week	> 2 days/week	Several times per day
	FEV ₁ or peak flow	$> 80\%$ predicted/ Personal best	60-80% predicted/ Personal best	$< 60\%$ predicted/ Personal best
	Validated questionnaires ATAQ ACQ ACT	0 ≤ 0.75 > 20	1-2 ≥ 1.5 16-19	3-4 N/A 15
Risk	Exacerbations	0-1 per year	2-3 per year	> 3 per year
	Progressive loss of lung function	Evaluation requires long term follow up.		
	Treatment-related adverse effects	Medication side effects can vary in intensity from none to very troublesome and worrisome. The level of intensity does not correlate to specific levels of control but should be considered in the overall assessment of risk.		
Recommended Action For Treatment (See figure 4-5 for treatment steps.)		*Maintain current step * Consider step down if well controlled for at least 3 months.	*Step up at least 1 step and *Reevaluate in 2-6 weeks. *For side effects, consider alternative treatment options.	* Consider short course of systemic oral corticosteroids * Step up (1-2 steps), and *Reevaluate in 2 weeks, *For side effects, consider alternative treatment options.
Notes: <ul style="list-style-type: none"> The level of control is based on the most severe impairment or risk category. Assess impairment domain by caregiver's recall of previous 2-4 weeks and by spirometry/or peak flow measures. Symptom assessment for longer periods should reflect a global assessment such as inquiring whether the patient's asthma is better or worse since the last visit. Exacerbation is defined as an acute episode of signs and symptoms requiring oral systemic corticosteroids. Before step up in therapy: <ul style="list-style-type: none"> Assess adherence to medications and environmental control. If alternative treatment option was used in a step, discontinue it and use preferred treatment for that step. 				

GINA Guidelines

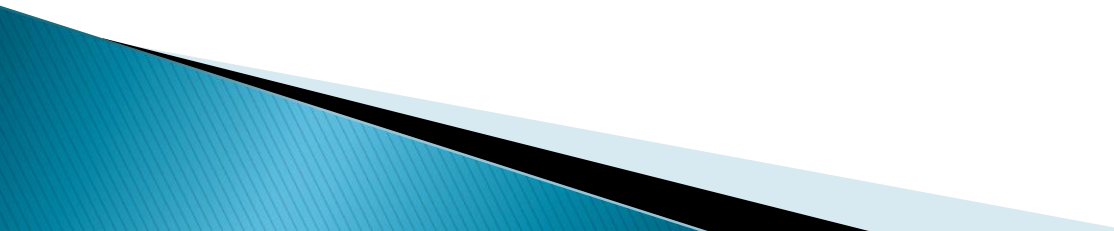
Global

Initiative for

Asthma

- ▶ Collaboration with NHLBI, National Institutes of Health and WHO

GINA Global Strategy for Asthma Management and Prevention

- ▶ 2014 major revision
 - ▶ Not a guideline – a way to manage asthma
 - ▶ Moved from practice-focused to patient-centered approach
- 

“New” Asthma Definition

“Asthma is a heterogeneous disease, usually characterized by chronic airway inflammation. It is defined by the history of respiratory symptoms such as wheeze, shortness of breath, chest tightness and cough that vary over time and in intensity, together with variable expiratory airflow limitation.”

Global Strategy for Asthma Management and Prevention

CONTROL = Symptom control + risk factors for
adverse outcomes

NHLBI vs. GINA

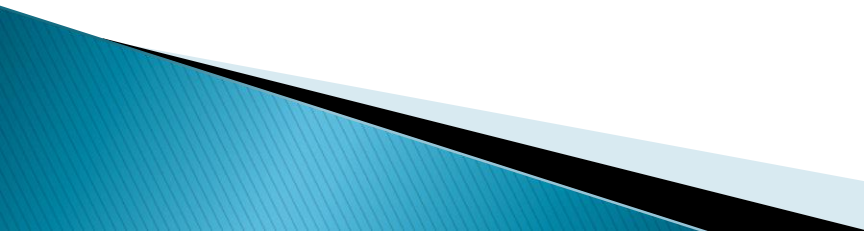
NHLBI

- ▶ Reduce Impairment
 - Symptoms
 - Maintain normal activities
 - Meet expectations
- ▶ Reduce Risk
 - Prevent exacerbations
 - Optimal pharmacotherapy
 - Reduce hospitalizations

GINA

- ▶ Symptom control
 - How often
 - When
 - Effects on activities
- ▶ Risk control
 - Potential for flare-ups
 - Airflow limitations
 - Medication side effects

Global Strategy for Asthma Management and Prevention

- ▶ Management of asthma
 - Treat asthma to control symptoms and minimize risk
 - Cycle of Care – Assess, adjust, and review
 - Check technique and adherence
 - Review non-pharmacologic, modify risk factors and comorbidities
- 

NHLBI vs. GINA

NHLBI

- ▶ Assess level of control
 - Impairment
 - Symptom
 - Lung function
 - Risk
 - Side effects
 - Adherence
- ▶ What's missing?

GINA

- ▶ Assess
 - Diagnosis
 - Symptoms
 - Risk factors (lung function)
 - Inhaler technique
 - Adherence
 - Patient preference
- ▶ Adjust
- ▶ Review

Inhaler Technique
Assessement!

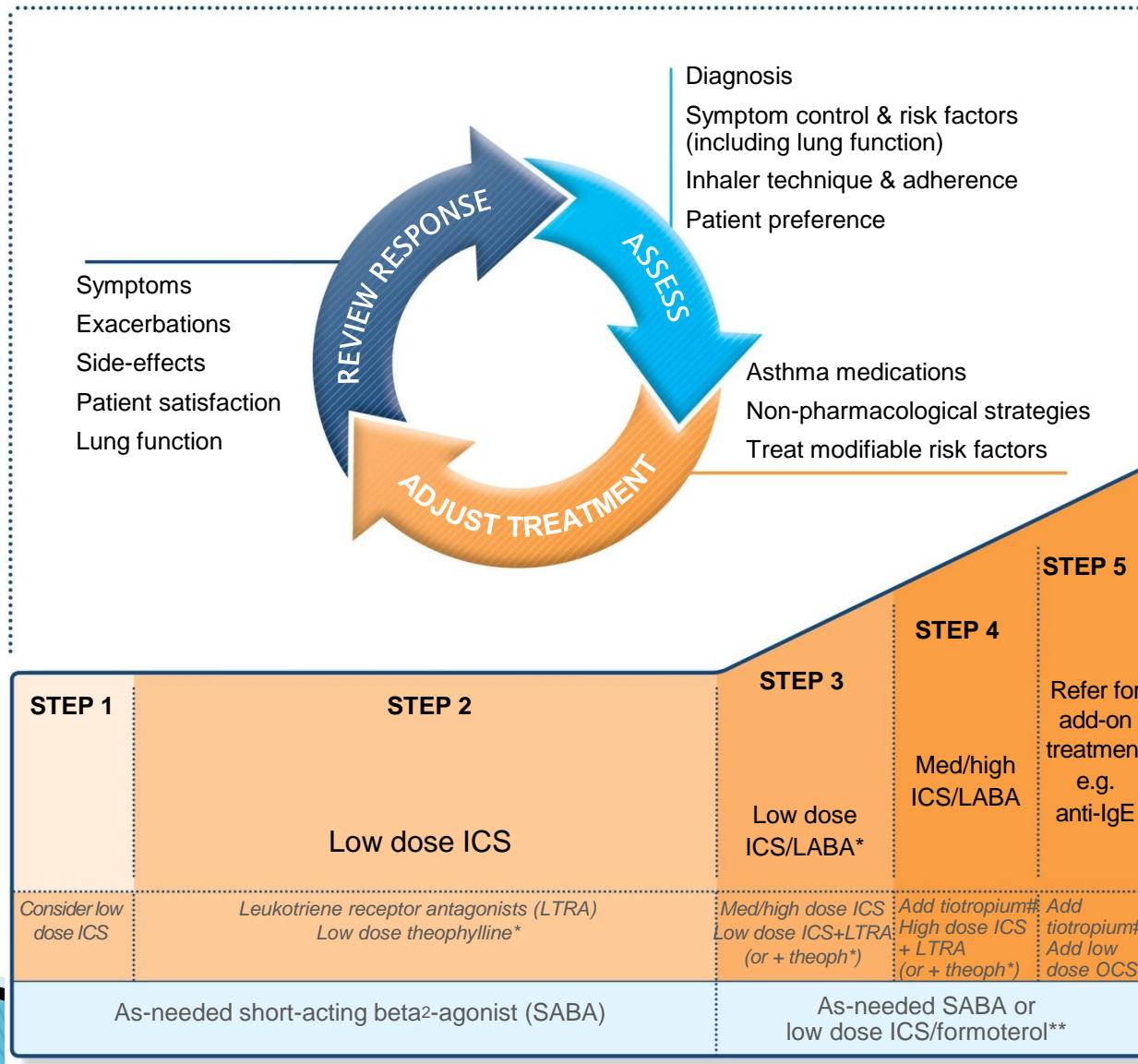
STEPWISE APPROACH FOR MANAGING ASTHMA IN YOUTHS ≥ 12 YEARS OF AGE AND ADULTS

Intermittent Asthma	Persistent Asthma: Daily Medication Consult with asthma specialist if step 4 care or higher is required. Consider consultation at step 3.					Step up if needed (first, check adherence, environmental control and comorbid conditions) Assess Control Step down if possible (and asthma is well controlled at least 3 months)
Step 1 <i>Preferred:</i> SABA PRN	Step 2 <i>Preferred:</i> Low dose ICS <i>Alternative:</i> Cromolyn, Nedocromil, LTRA or Theophylline	Step 3 <i>Preferred:</i> Medium dose ICS OR Low dose ICS + LABA <i>Alternative:</i> Low-dose ICS + either LTRA, Theophylline, or Zileuton	Step 4 <i>Preferred:</i> Medium dose ICS+ LABA <i>Alternative:</i> Medium dose ICS+either LTRA, Theophylline or Zileuton	Step 5 <i>Preferred:</i> High doses ICS + LABA AND Omalizumab may be considered for patients who have allergies	Step 6 <i>Preferred:</i> High dose ICS + LABA + oral corticosteroid AND Omalizumab may be considered for patients who have allergies	
Patient Education and Environmental Control at Each Step						
Quick Relief Medication for All Patients						
<ul style="list-style-type: none"> • SABA as needed for symptoms. Intensity of treatment depends on severity of symptoms: up to 3 treatments at 20-minute intervals as needed. Short course of systemic oral corticosteroids may be needed. • Use of beta₂-agonist >2 days a week for symptom control (not prevention of EIB) indicates inadequate control and the need to step up treatment 						
<p>Key: ICS, inhaled corticosteroid; LABA, inhaled long acting beta₂ agonist, LTRA, leukotriene receptor antagonist; SABA, inhaled short-acting beta₂ agonist</p> <p>Note:</p> <ul style="list-style-type: none"> • The stepwise approach is meant to assist, not replace, the clinical decision making required to meet individual patient needs. • If alternative treatment is used and response is inadequate, discontinue it and use the preferred treatment before stepping up. • Zileuton is a less desirable alternative due to limited studies as adjunctive therapy and the need to monitor liver function. Theophylline requires monitoring of serum concentration levels. • In step 6, before oral corticosteroids are introduced, a trial of high-doses ICS + LABA+either LTRA, theophylline, or zileuton may be considered, although this approach has not been studied in clinical trials. 						



NHLBI Pharmacotherapy

GINA pharmacotherapy



*For children 6-11 years, theophylline is not recommended, and preferred Step 3 is medium dose ICS

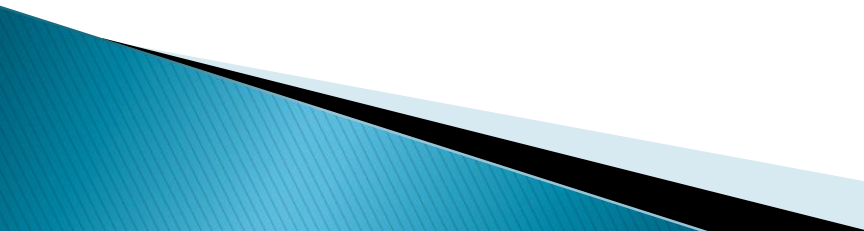
**For patients prescribed BDP/formoterol or BUD/formoterol maintenance and reliever therapy

Tiotropium by soft-mist inhaler is indicated as add-on treatment for adults (≥18 yrs) with a history of exacerbations

Global Strategy for Asthma Management and Prevention – 2015 Update

- ▶ Add-on tiotropium by soft-mist inhaler as an “other controller”
 - Steps 4 and 5 (GINA)
- ▶ Management of asthma in pregnancy
- ▶ DPI’s can be used to deliver SABA’s in mild-moderate asthma exacerbations
- ▶ Assessment of risk factors
 - Over-use of SABA is a risk factor for exacerbations
 - Very high use is a risk factor for asthma-related death

Tiotropium (Spiriva) – Respimat

- ▶ Long-acting muscarinic antagonist (LAMA)
 - ▶ Approved in U.S. in 2004 – first line agent in COPD – Handihaler
 - ▶ 24 hour antimuscarinic activity
 - ▶ Muscarinic receptor stimulation = bronchoconstriction and mucous production
- 

Tiotropium – Add-on maintenance treatment for asthma

- ▶ Based on two – Phase III clinical trials
- ▶ Patients not controlled on ICS or ICS/LABA treatment
- ▶ Results:
 - Improved lung function
 - Increased time to first exacerbation
- ▶ GINA approved as “other” controller for Step 4 or 5 (severe asthma)
- ▶ Not currently FDA approved in U.S. (under review)

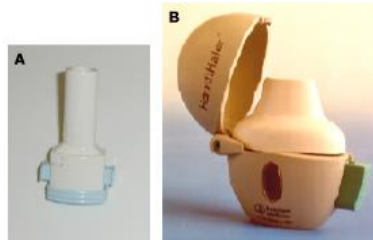
Inhalation Delivery Devices

- Metered dose inhaler (MDI)



- Dry powder inhaler (DPI)

Single-dose devices



Multiple-dose devices



Inhalation Delivery Devices

- Breath-activated inhaler

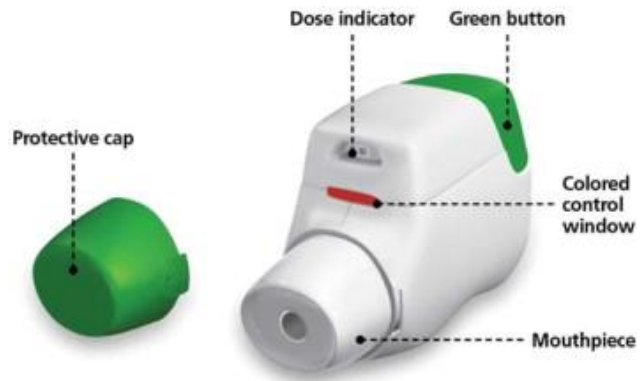


Figure A



- Soft-mist inhaler



Respimat Soft-Mist Inhaler Device

Respimat Device



How to Use the Respimat (TOP)



TURN

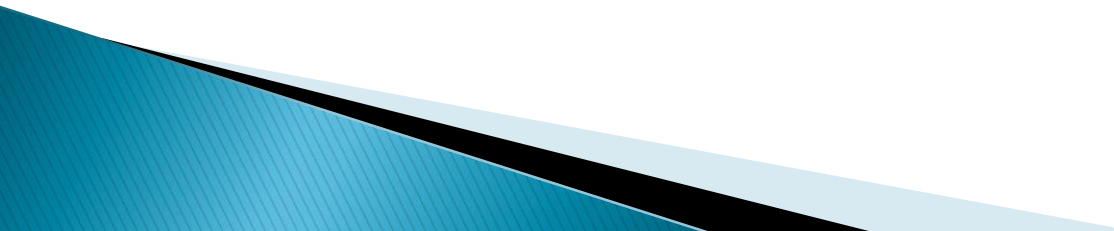


OPEN

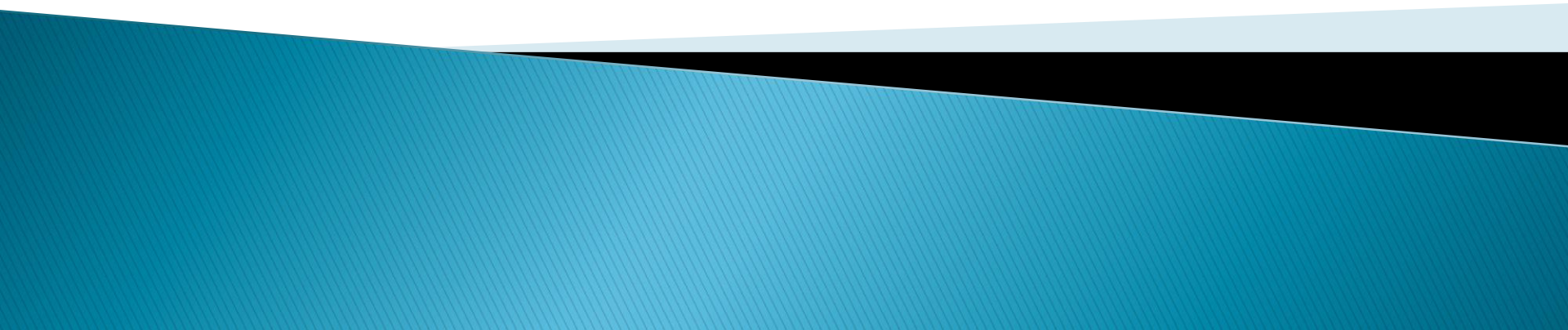


PRESS

Respimat Use

- ▶ Must be primed upon first use
 - ▶ No need to shake with each use (no propellant)
 - ▶ Turn base to load dose
 - ▶ Open cap after turning base
 - ▶ Press the button to release the dose
 - ▶ Use a slow deep breath
- 

ACOS
Asthma-COPD Overlap
Syndrome



Asthma–COPD Overlap Syndrome (ACOS)

Children and young adults = asthma

Adults >40yo = COPD more common

However, many patients may have features of
both asthma and COPD

Distinguishing between asthma and COPD may
be difficult



ACOS

- ▶ Patients with both features may have worse outcomes:
 - Frequent exacerbations
 - Poor quality of life
 - Higher mortality
 - Greater healthcare utilization
- ▶ Rates of ACOS – 15–55% of patients with chronic airway disease

Definitions

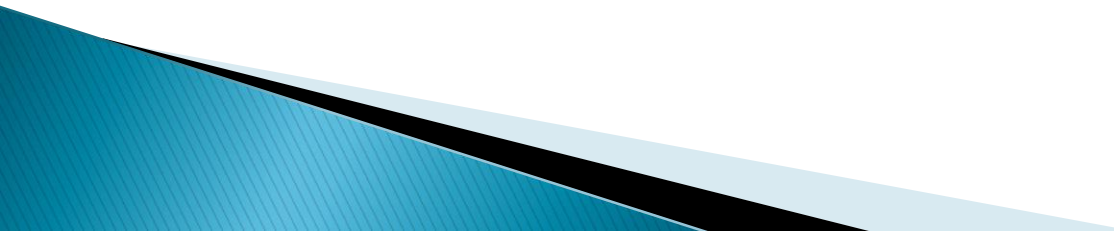
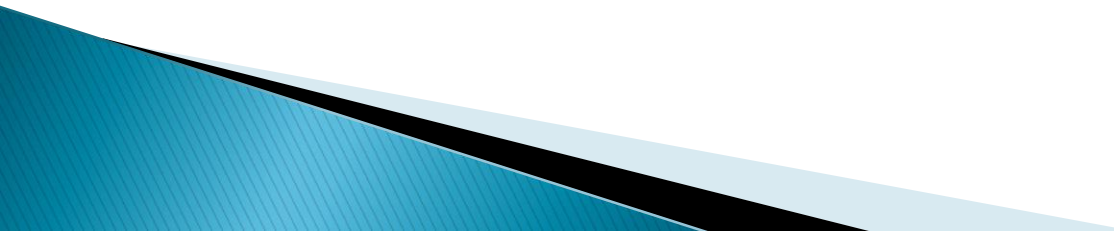
- ▶ Asthma – Defined earlier in this presentation
 - ▶ COPD – persistent airflow limitation that is usually progressive and associated with enhanced chronic inflammatory responses in the airways
 - ▶ ACOS - persistent airflow limitation with several features usually associated with asthma and several features usually associated with COPD.
- 

Table 2a. Usual features of asthma, COPD and ACOS

Feature	Asthma	COPD	ACOS
<i>Age of onset</i>	Usually childhood onset but can commence at any age.	Usually > 40 years of age	Usually age ≥40 years, but may have had symptoms in childhood or early adulthood
<i>Pattern of respiratory symptoms</i>	Symptoms may vary over time (day to day, or over longer periods), often limiting activity. Often triggered by exercise, emotions including laughter, dust or exposure to allergens	Chronic usually continuous symptoms, particularly during exercise, with 'better' and 'worse' days	Respiratory symptoms including exertional dyspnea are persistent but variability may be prominent
<i>Lung function</i>	Current and/or historical variable airflow limitation, e.g. BD reversibility, AHR	FEV ₁ may be improved by therapy, but post-BD FEV ₁ /FVC < 0.7 persists	Airflow limitation not fully reversible, but often with current or historical variability
<i>Lung function between symptoms</i>	May be normal between symptoms	Persistent airflow limitation	Persistent airflow limitation
<i>Past history or family history</i>	Many patients have allergies and a personal history of asthma in childhood, and/or family history of asthma	History of exposure to noxious particles and gases (mainly tobacco smoking and biomass fuels)	Frequently a history of doctor-diagnosed asthma (current or previous), allergies and a family history of asthma, and/or a history of noxious exposures
<i>Time course</i>	Often improves spontaneously or with treatment, but may result in fixed airflow limitation	Generally, slowly progressive over years despite treatment	Symptoms are partly but significantly reduced by treatment. Progression is usual and treatment needs are high
<i>Chest X-ray</i>	Usually normal	Severe hyperinflation & other changes of COPD	Similar to COPD
<i>Exacerbations</i>	Exacerbations occur, but the risk of exacerbations can be considerably reduced by treatment	Exacerbations can be reduced by treatment. If present, comorbidities contribute to impairment	Exacerbations may be more common than in COPD but are reduced by treatment. Comorbidities can contribute to impairment
<i>Typical airway inflammation</i>	Eosinophils and/or neutrophils	Neutrophils in sputum, lymphocytes in airways, may have systemic inflammation	Eosinophils and/or neutrophils in sputum.

Initial Treatment

- ▶ Asthma (single disease)
 - ICS
 - Add-on LABA and/or LAMA (if needed)
 - ▶ COPD (single disease)
 - LABA and/or LAMA
 - Add-on ICS (not monotherapy)
 - ▶ ACOS
 - ICS + LABA and/or LAMA
- 

Case: Asthma, COPD, or ACOS?

- ▶ AP is a 78yo female who presents to the pharmacy today (it is early Spring) with a prescription for an Advair Diskus 500/50 inhaler. She is complaining of increased SOB that wakes her up at night at least 2 nights a week, and wheezing. She complains of productive cough that can lead to SOB. Over the years she has had increased symptoms during the Spring due to allergies, but states lately she has had daily symptoms especially after her daily walk and has needed her short-acting inhaler. After using her inhaler she gets relief but only for short periods of time.
- ▶
- ▶ PMH: asthma (since she was a child)
- ▶ Hyperlipidemia (2002)
- ▶
- ▶ SH: denies alcohol/elicited drug use
- ▶ Smoker ½ ppd x 5 years (stopped around 1980), her husband smokes 1 ppd
- ▶
- ▶ FEV₁: 70%
- ▶

Case (Cont'd)

- ▶ Meds:

- ▶ Advair 250/50 Diskus 1 puff bid

- ▶ Albuterol MDI 2 puffs prn

- ▶ Albuterol 0.083% neb bid prn

- ▶ Amox-Clav 875mg 1 bid (has had 5 courses of abx over past 9 months)

- ▶ Atorvastatin 10mg 1 hs

- ▶ Budesonide 0.5mg/2ml neb bid

- ▶ Prednisone 10mg burst therapy (has had 7 courses over past 9 months)

- ▶

- ▶ OTC's:

- ▶ Zyrtec 10mg 1 qd

- ▶ Sudafed 30mg 1 prn

- ▶ Allbee w/C 1 qd

Table 2b. Features that favor asthma or COPD

Favors Asthma	Favors COPD
<input type="checkbox"/> Onset before age 20 years	<input type="checkbox"/> Onset after age 40 years
<input type="checkbox"/> Variation in symptoms over minutes, hours or days	<input type="checkbox"/> Persistence of symptoms despite treatment
<input type="checkbox"/> Symptoms worse during the night or early morning	<input checked="" type="checkbox"/> Good and bad days but always daily symptoms and exertional dyspnea
<input type="checkbox"/> Symptoms triggered by exercise, emotions including laughter, dust or exposure to allergens	<input checked="" type="checkbox"/> Chronic cough and sputum preceded onset of dyspnea, unrelated to triggers
<input type="checkbox"/> Record of variable airflow limitation (spirometry, peak flow)	<input type="checkbox"/> Record of persistent airflow limitation (post-bronchodilator FEV1/FVC < 0.7)
<input type="checkbox"/> Lung function normal between symptoms	<input type="checkbox"/> Lung function abnormal between symptoms
<input type="checkbox"/> Previous doctor diagnosis of asthma	<input type="checkbox"/> Previous doctor diagnosis of COPD, chronic bronchitis or emphysema
<input type="checkbox"/> Family history of asthma, and other allergic conditio	<input checked="" type="checkbox"/> Heavy exposure to a risk factor: tobacco smoke, biomass fuels
<input type="checkbox"/> No worsening of symptoms over time. Symptoms vary either seasonally, or from year to year	<input type="checkbox"/> Symptoms slowly worsening over time (progressive course over years)
<input type="checkbox"/> May improve spontaneously or have an immediate response to BD or to ICS over weeks	<input checked="" type="checkbox"/> Rapid-acting bronchodilator treatment provides only limited relief.
<input type="checkbox"/> Normal	<input type="checkbox"/> Severe hyperinflation

For a patient, count the number of checked boxes in each column. If 3 or more are checked for either asthma or COPD, that diagnosis is suggested. But if there are similar numbers of checked boxes in each column, ACOS should be considered.

Case (cont'd)

- ▶ Does our patient have asthma, COPD, or ACOS?

ACOS

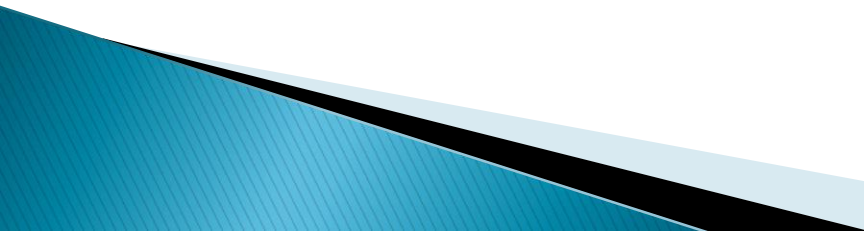
- ▶ What should we start our patient on for initial treatment?

ICS + LABA and/or LAMA

Future

- ▶ ACOS is very new
- ▶ Additional studies need to be done in order to better assess diagnosis, classification, treatment

In Summary

- ▶ Review of NHLBI Guidelines
 - Assessment of risk and impairment to guide treatment
 - ▶ GINA Global Strategy for Asthma Management and Prevention
 - Cycle of care – assess, adjust and review
 - ▶ Tiotropium – Add-on treatment in severe asthma
 - ▶ ACOS – New way to assess chronic airway disease
- 

Questions?

