

Asthma-Part 1

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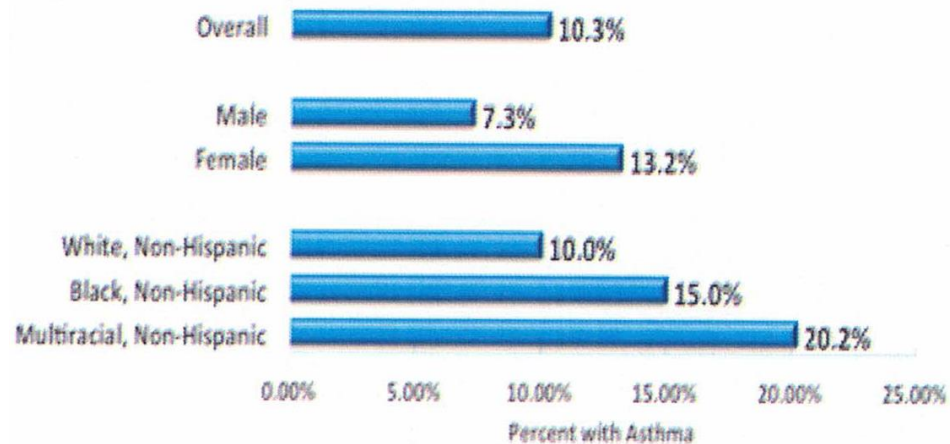
Franciscan Physician Network Pulmonary

Objectives

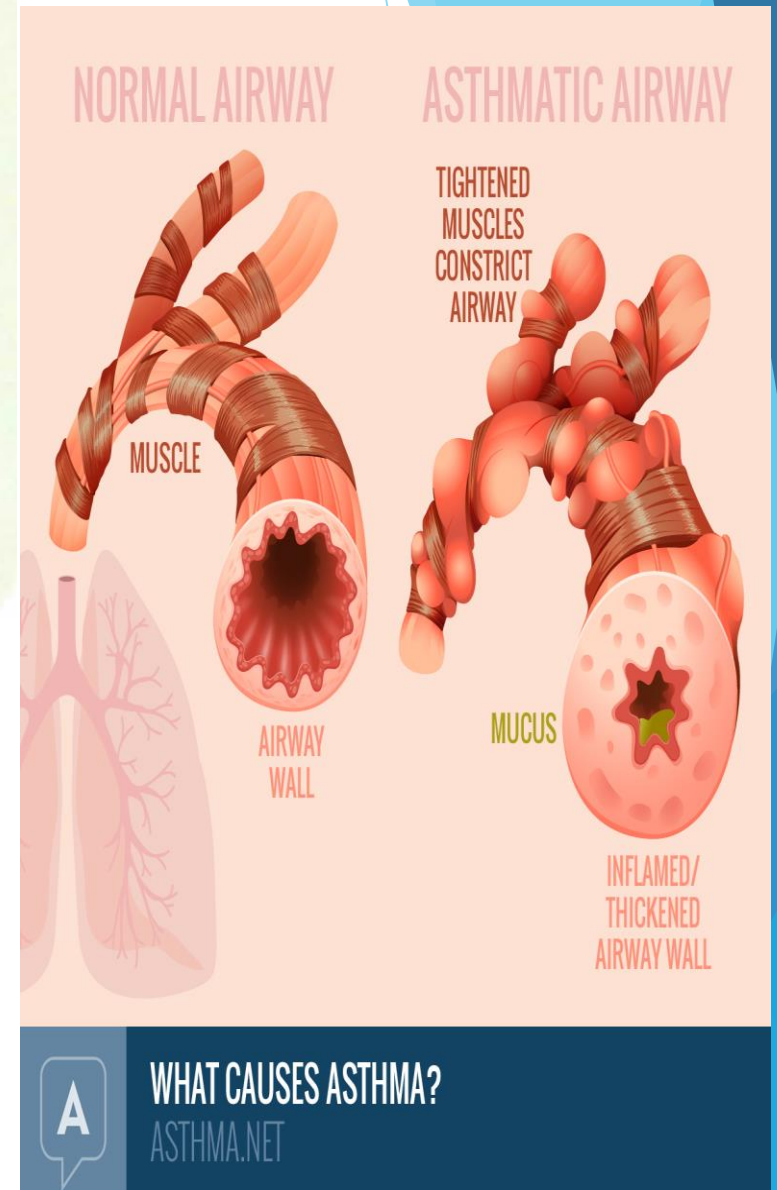
- ▶ What is Asthma and why do we care about it?
- ▶ Who around us is affected by Asthma and how does it impact us?
- ▶ How are we diagnosing asthma?/ What diagnosis do we use?
- ▶ What affects Asthma control/management?
- ▶ What medications are we using to manage Asthma symptoms?
- ▶ What else are we doing to best manage Asthma?
- ▶ Case studies to evaluate

ASTHMA is a common chronic inflammatory disease that affects the airways and lungs, causing recurring periods of wheezing, chest tightness, coughing and shortness of breath. It is a serious public health concern that currently affects 10.3%, or approximately 770,000, of Indiana adults.¹ More adult females (13.2%) than adult males (7.3%) currently have asthma*. More multiracial non-Hispanic (NH) adults (20.2%) have a current asthma diagnosis than any other racial or ethnic group [Fig 1].

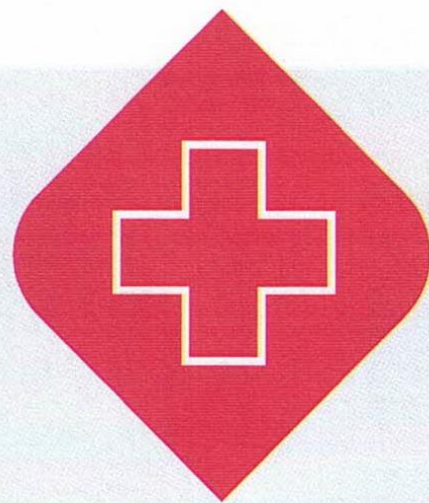
Figure 1. Current asthma* prevalence among adults by sex and race, Indiana, 2013¹



Source: CDC and ISDH Data Analysis Team.



Asthma causes
2 MILLION
visits to emergency rooms
yearly.



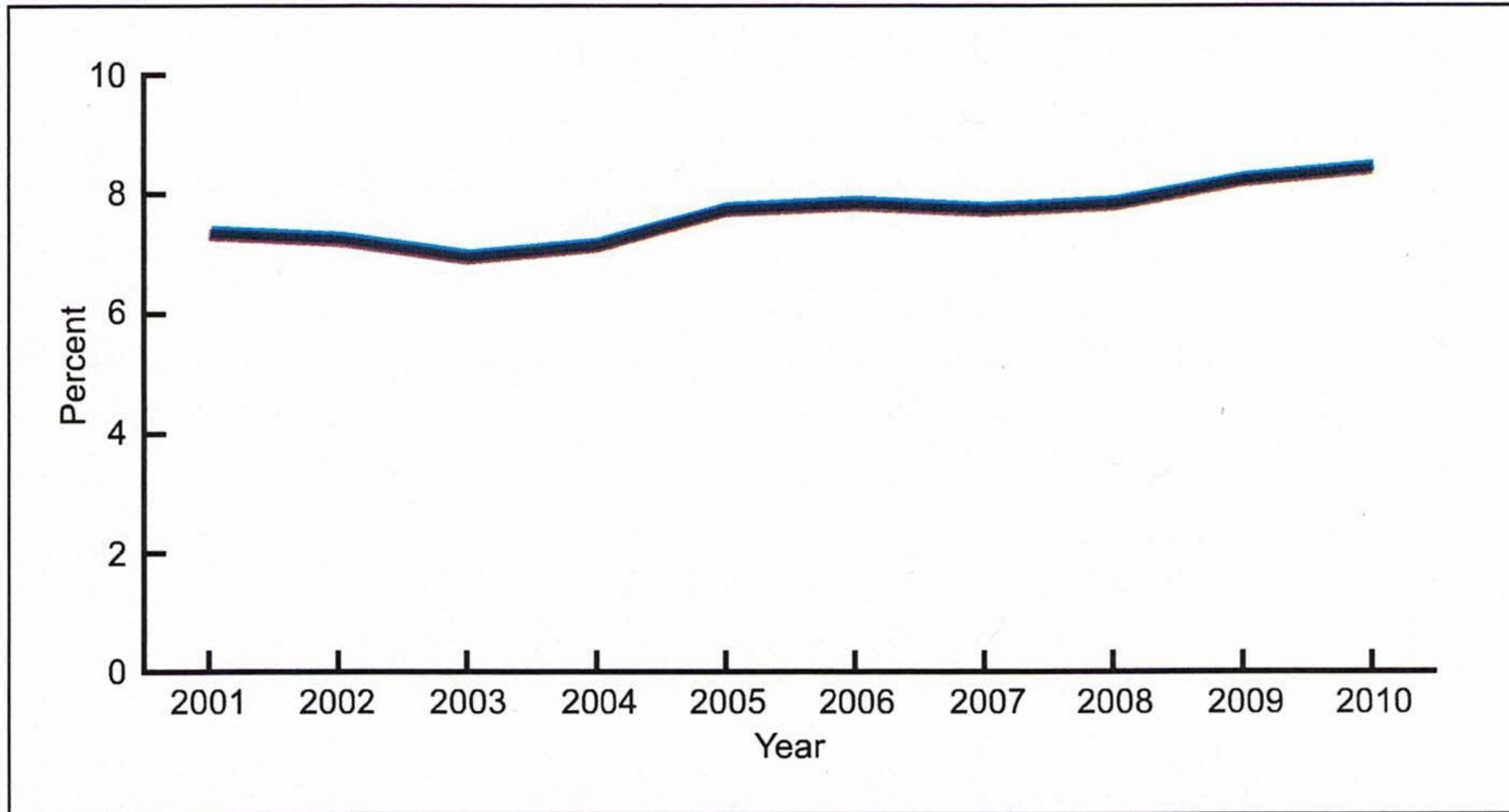
Each visit averages
\$1502
in costs.

10 PEOPLE
per day lose their life to asthma.



Asthma prevalence increased from 2001 to 2010 and is now at its highest level.

Figure 1. Asthma prevalence in the United States, 2001–2010



	Total	Child	Adult
	Rate* (SE)	Rate* (SE)	Rate* (SE)
Total	10.0 (0.2)	2.8 (0.2)	13.3 (0.2)
Sex			
Male	8.5 (0.2)	3.4 (0.3)	10.1 (0.3)
Female	11.2 (0.3)	2.2 (0.2)	16.3 (0.4)
Race			
White (NH)	8.2 (0.2)	1.2 (0.2)	12.3 (0.3)
Black (NH)	22.3 (0.8)	11.4 (1.0)	26.6 (0.9)
Other (NH)	8.5 (0.7)	—	9.9 (0.8)
Ethnicity			
Hispanic	7.8 (0.5)	1.7 (0.3)	7.7 (0.4)
Not Hispanic	10.5 (0.2)	3.2 (0.2)	14.2 (0.3)
Age Group			
0-4 years[†]	—	1.8 (0.3)	—
5-17 years[†]	—	3.2 (0.2)	—
18-34 years[†]	—	—	5.8 (0.3)
35 – 64 years[†]	—	—	11.5 (0.3)
65+ years[†]	—	—	29.2 (0.8)

Note: NH = Non-Hispanic, SE = Standard Error

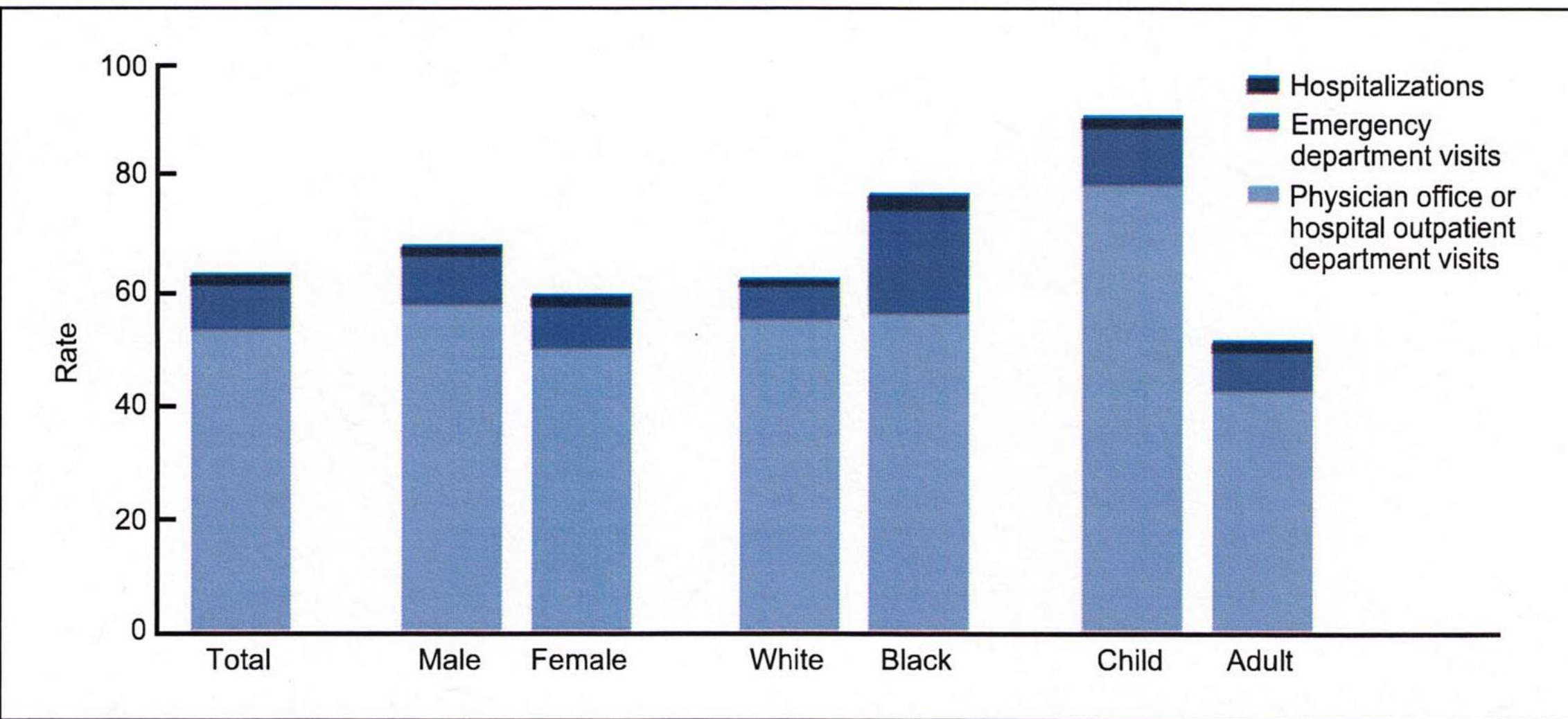
*Rates are age-adjusted to the 2000 standard population

[†]Rates are not age-adjusted, Source: CDC WONDER

Management of asthma among Indiana adults with a current asthma diagnosis

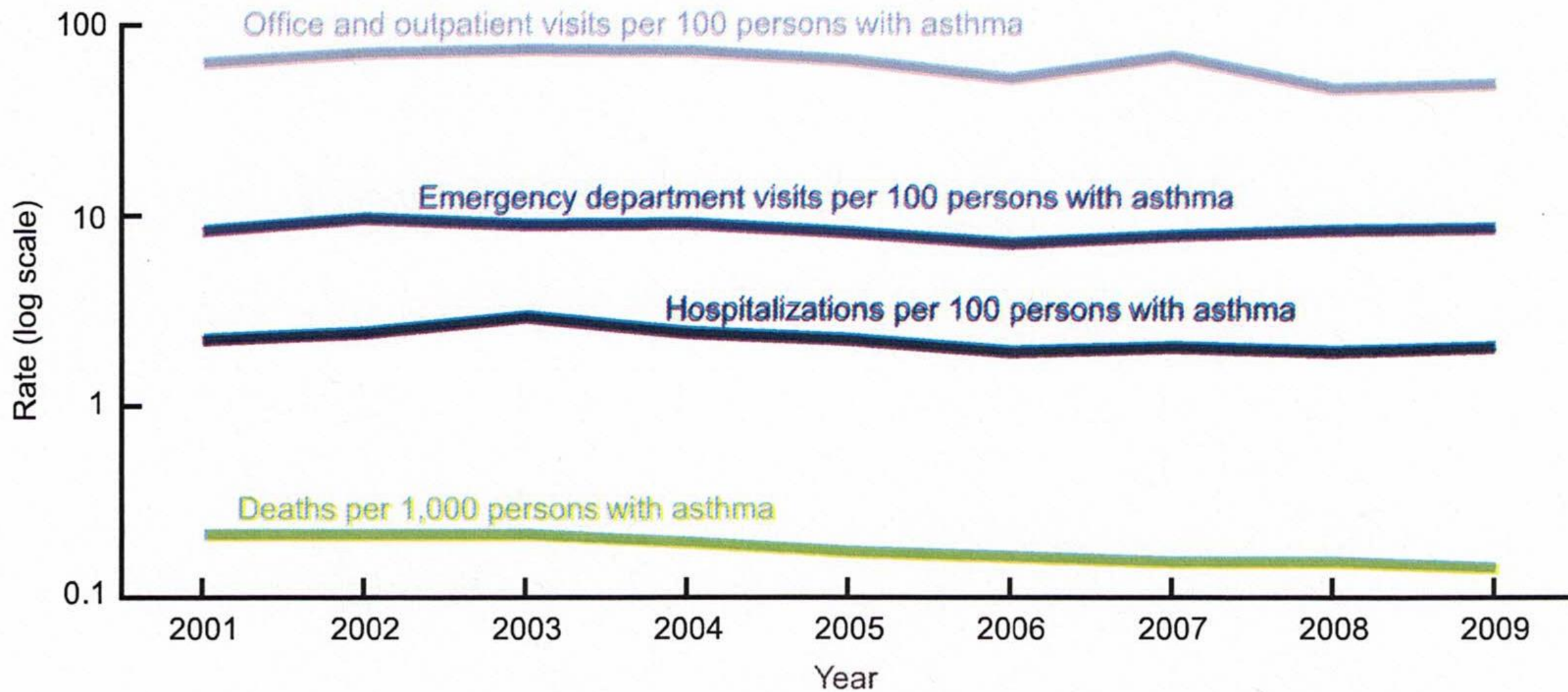
- ❑ Although asthma is rarely fatal, poorly controlled asthma can lead to decreased productivity, missed work and the inability to participate in daily activities.
 - 61.6% of adults with asthma missed a week or less of work due to their asthma in the past 12 months⁴
 - 9.2% said their activity was limited a lot during the past 30 days, 11.5% had moderate activity limitations and 37.9% reported “a little” activity limitation⁴

Figure 4. Asthma health care encounters per 100 persons with asthma: United States, 2001–2009



NOTE: Access data table for Figure 4 at: http://www.cdc.gov/nchs/data/databriefs/db94_tables.pdf#4.

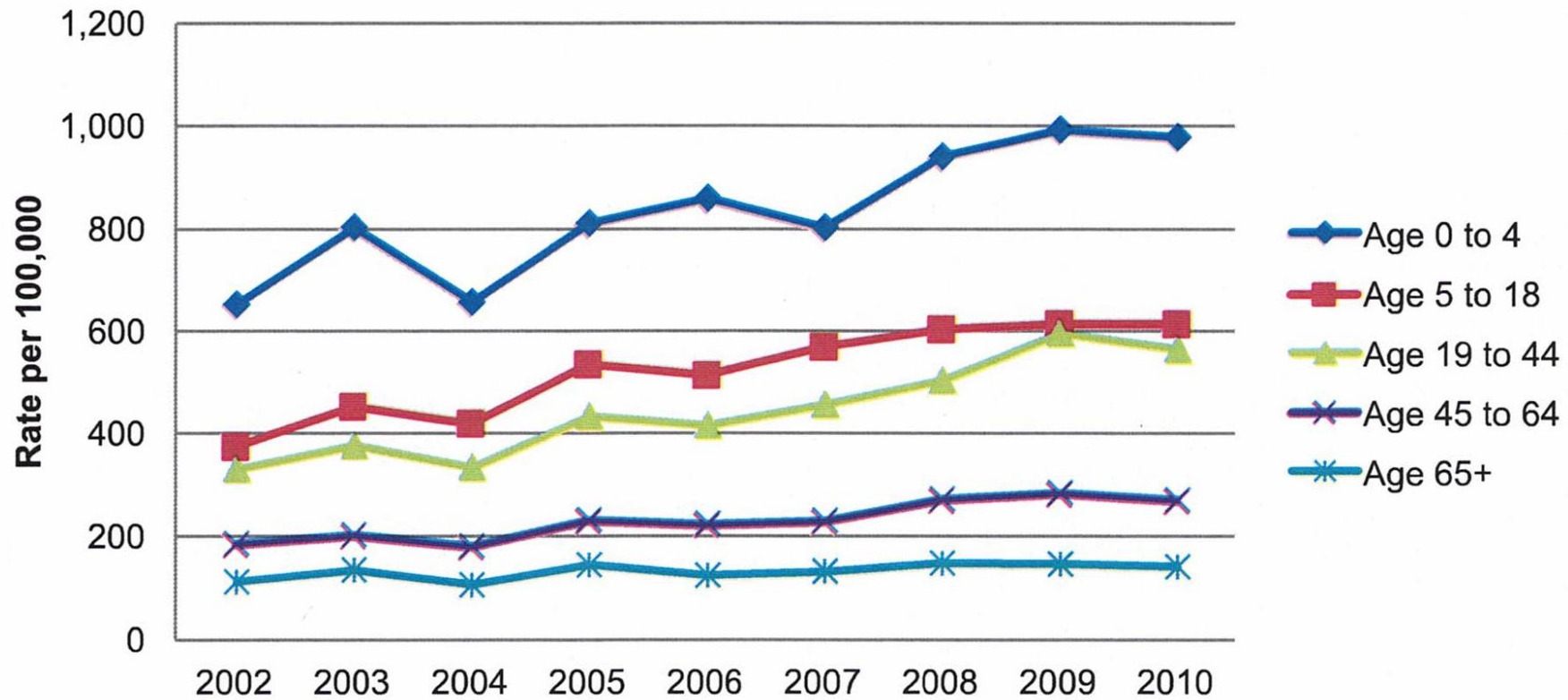
SOURCES: CDC/NCHS, National Ambulatory Medical Care Survey, National Hospital Ambulatory Medical Care Survey, National Hospital Discharge Survey, and National Health Interview Survey.



NOTE: Access data table for Figure 3 at: http://www.cdc.gov/nchs/data/databriefs/db94_tables.pdf#3.

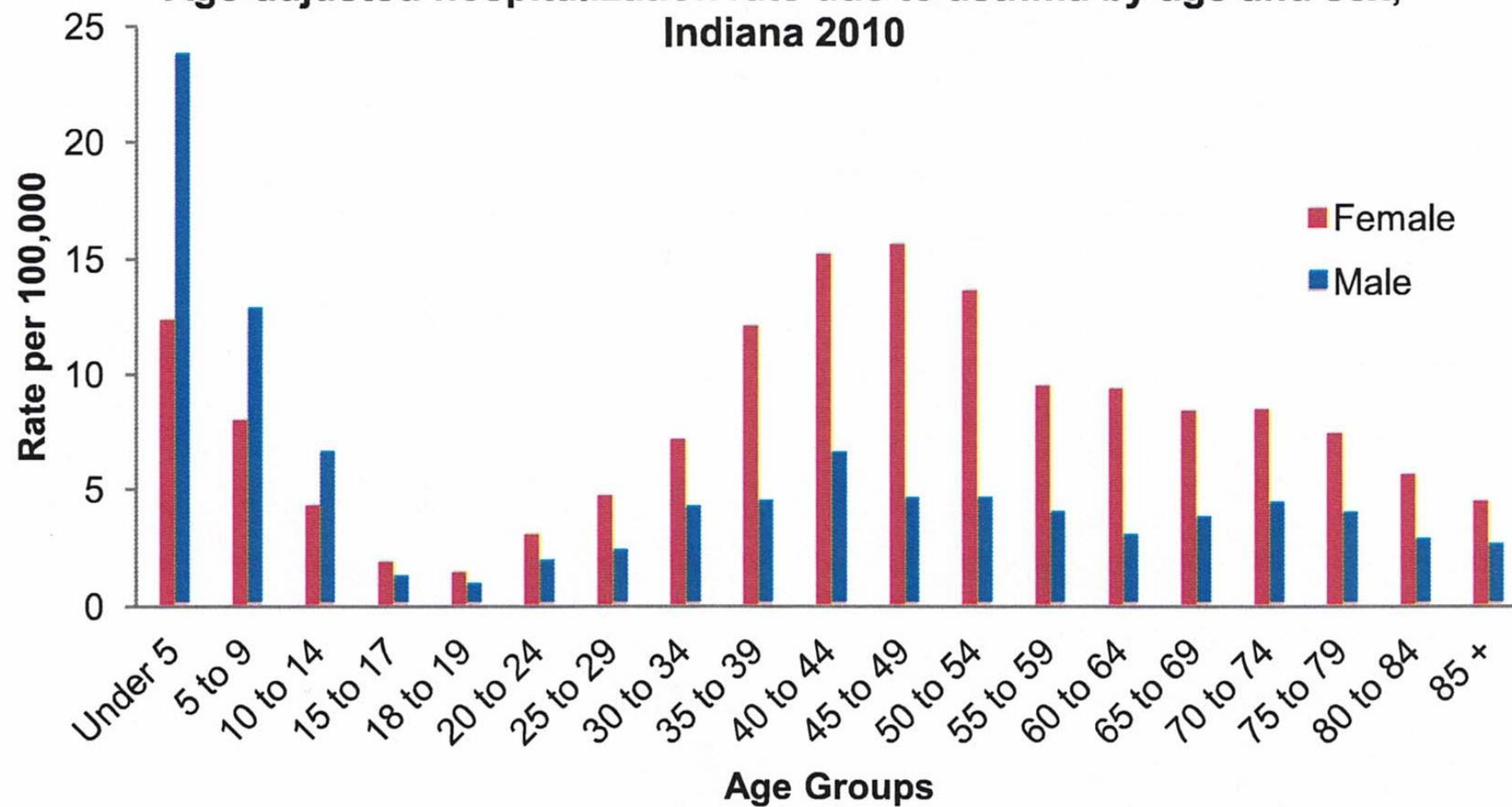
SOURCES: CDC/NCHS, National Ambulatory Medical Care Survey, National Hospital Ambulatory Medical Care Survey, National Hospital Discharge Survey, National Vital Statistics System, and National Health Interview Survey.

Age-Specific Rates of Emergency Department Visits by Age Indiana Residents, Principal Diagnosis Asthma 2002-2010



Data Source: Indiana State Department of Health

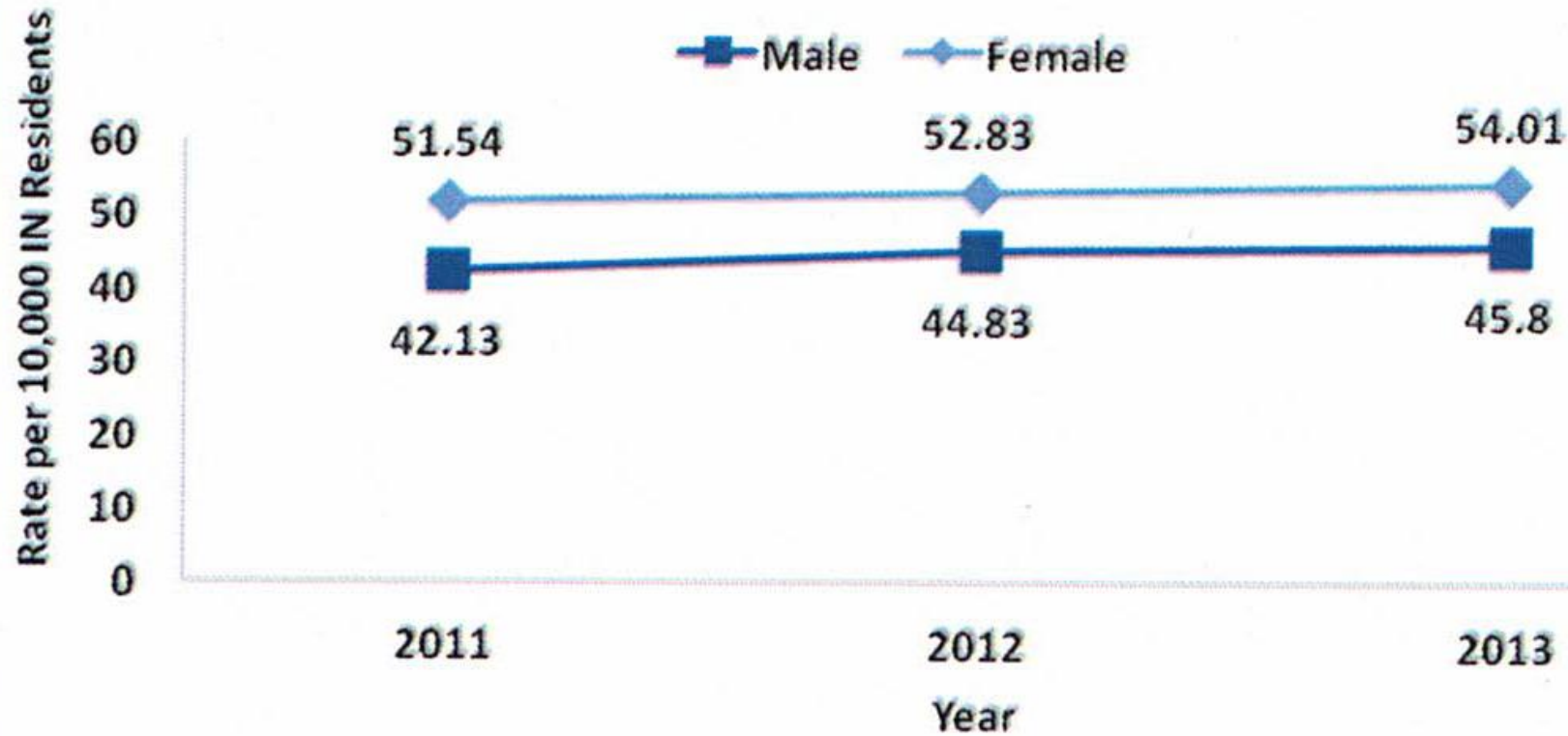
**Age-adjusted hospitalization rate due to asthma by age and sex,
Indiana 2010**



Data Source: Indiana State Department of Health

ER VISITS

Figure 2. Asthma Emergency Department Rates by Sex, Indiana, 2011-2013



Emergency department (ED) visits²

ED visits declined from 2009 to 2011, but in 2013 increased 2.4% from 2012. During 2013:

- ❑ 31,307 ED visits were reported with a principal diagnosis of asthma.
- ❑ The overall age-adjusted rate was 49.9 asthma ED visits per 10,000 Indiana residents.
- ❑ 37% of asthma ED visits were for children (0–17 years).
- ❑ Black residents visited the ED for asthma at a higher rate (139.2 per 10,000) than white residents (33.2 per 10,000).

Hospitalizations⁴

The 2013 rate of asthma hospitalizations was the lowest since 2009. During 2013:

- ❑ 7,200 primary diagnosis asthma hospitalizations occurred, down 6.6% from 2012.
- ❑ The overall age-adjusted rate is 10.6 asthma hospitalizations per 10,000 Indiana residents.
- ❑ Females had higher rates of hospitalization than males (13.3 versus 7.8 per 10,000).
- ❑ Black Indiana residents (27.5 per 10,000) were hospitalized more than 3 times more often than white residents (8.0 per 10,000).

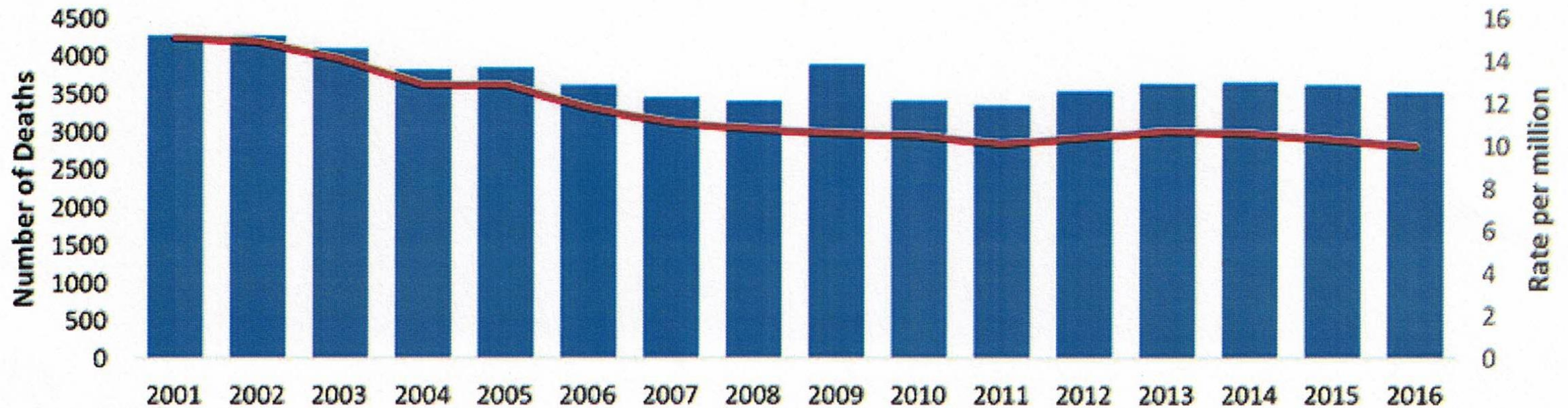
Mortality³

- ❑ In 2013, 69 Indiana residents' deaths had asthma listed as the leading cause of death.
 - 16 were male and 53 were female
 - 50 were white and 19 were black
 - 50.7% were 65 years and older at time of death

Asthma deaths have decreased over time and varied by demographic characteristics.

Deaths due to asthma are rare and are thought to be largely preventable, particularly among children and young adults. National asthma guidelines recommend early treatment and supportive efforts that focus on providing quality health care and patient education to patients who are at high risk of asthma-related death.

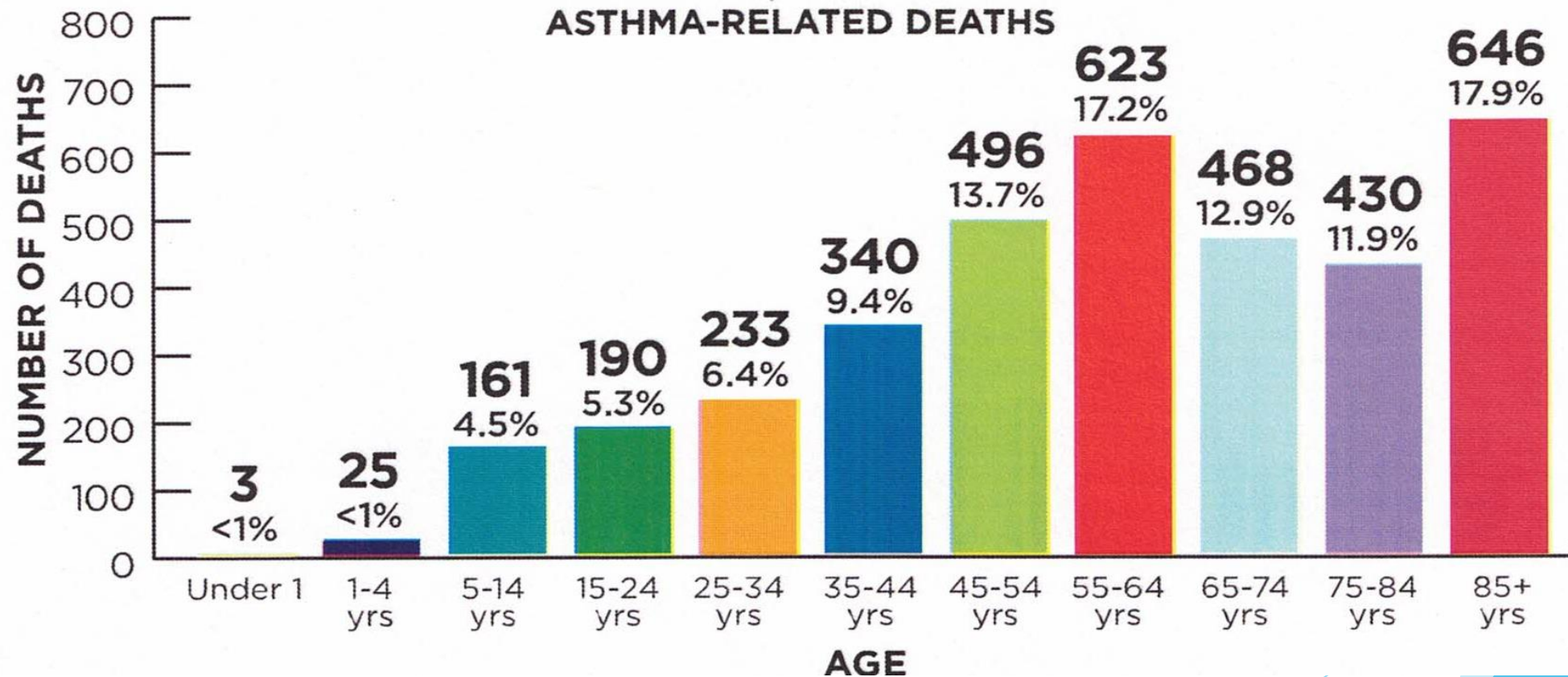
Number and rate of asthma deaths by year, United States: 2001-2016



ASTHMA-RELATED MORTALITY

Tragically, asthma can be fatal. In 2015, there were 3,615 deaths attributed to asthma in the U.S.⁵

This means about 10 people per day lose their life to asthma. Older adults are at the highest risk of fatality:



The cities with the most asthma-related deaths are:

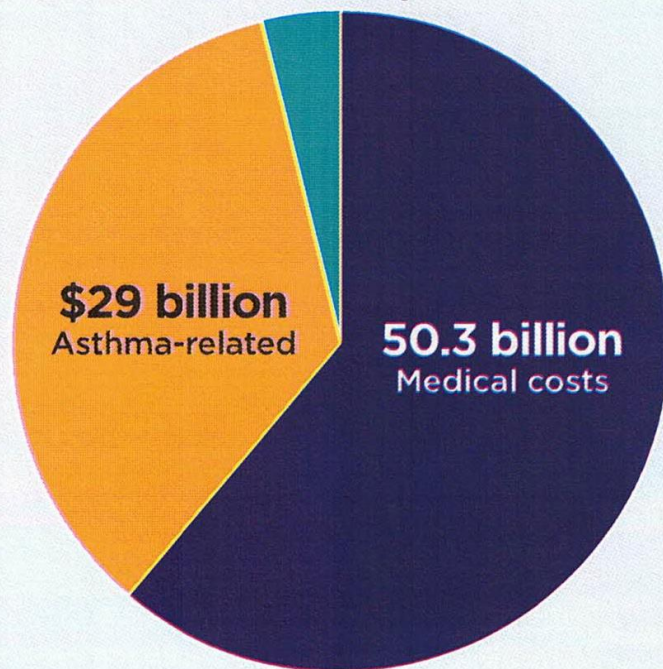
Asthma-Related Deaths Ranking	Metropolitan Area	Overall Asthma Capital National Ranking
1	Richmond, VA (highest in U.S.)	2
2	Chicago, IL	43
3	New York, NY	20
4	New Orleans, LA	25
5	Detroit, MI	16
6	Philadelphia, PA	4

COST OF MANAGING ASTHMA

The cost of managing asthma are steep – both for those with the disease and the nation as a whole.

\$81.9 BILLION
Annual U.S. economic cost of asthma⁷

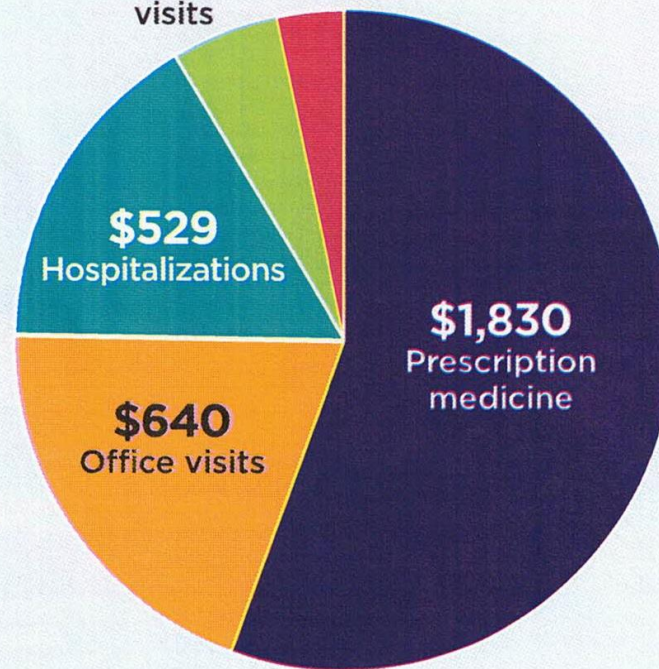
\$3 billion
Missed school
and work days



\$3,266
Average cost of asthma per person, per year⁷

\$176
Outpatient visits

\$105
ED visits



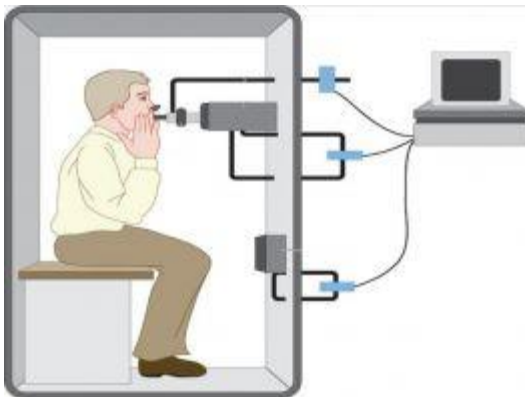
7. Nurmagambetov T, et al. The Economic Burden of Asthma in the United States, 2008 - 2013. *Annals of the American Thoracic Society* : 11 Jan 2018. Available from: URL: <https://doi.org/10.1513/AnnalsATS.201703-259OC>

Why Treat Asthma

- ▶ Asthma is a reversible chronic inflammatory disease-chronic inflammation remodels airways and they become no longer reversible obstruction
- ▶ COPD is not reversible can only treat symptoms and prevent exacerbations
- ▶ Treat any underlying cause contributing to Asthma
- ▶ Quality of life

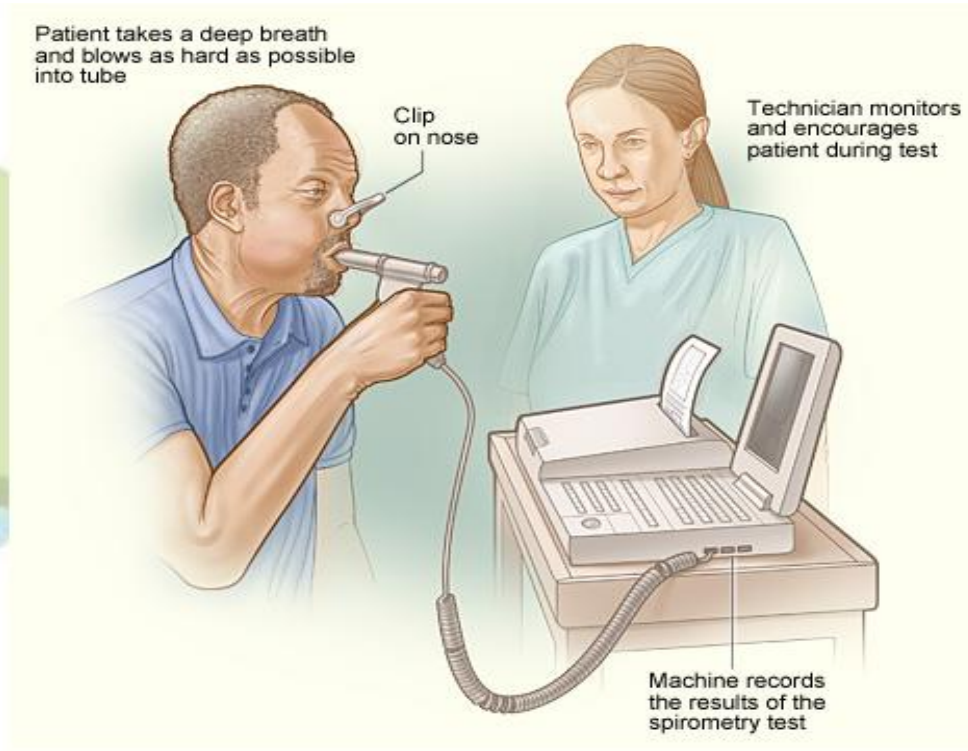
Diagnosing Asthma

- PFT should show a reduction in FEV1 to show obstruction that may be reversible with bronchodilator at 12% increase or 200 ml
- History and Physical-key component
- Other comorbidities -allergic rhinitis , nasal polyps, sinusitis, atopy
- Exhaled Nitric Oxide
- IGE, IGA, IGG, IGM , IGE 30-
- IGE 6-12 yrs -30-1300, 44-330#, >12 years 30-700, 66-330#
- Eosinophil count, >150 or 400
- Methacholine challenge
- Allergy testing
- Oxygen saturation
- peak flow meters





Patient takes a deep breath and blows as hard as possible into tube



Clip on nose

Technician monitors and encourages patient during test

Machine records the results of the spirometry test



Monitor

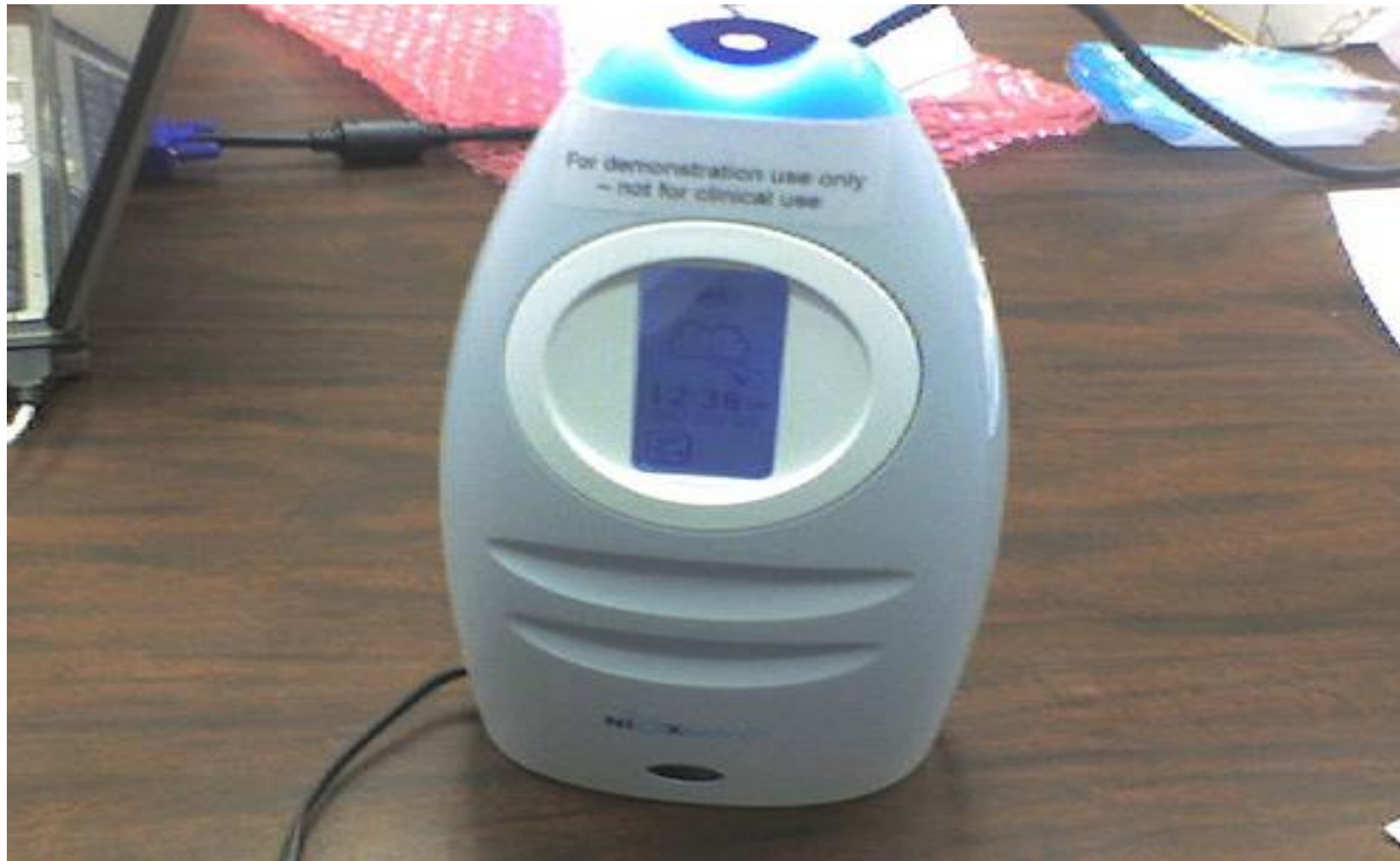
Nose clip

Spirometer

Spirometry measures how fast and how much air you breathe out



EXHALED NITRIC OXIDE



HOW TO USE YOUR PEAK FLOW METER

A peak flow meter helps you check how well your asthma is controlled. Peak flow meters are most helpful for people with moderate or severe asthma. This guide will tell you (1) how to find your personal best peak flow number, (2) how to use your personal best number to set your peak flow zones, (3) how to take your peak flow, and (4) when to take your peak flow to check your asthma each day.

Your Peak Flow Zones

Your peak flow zones are based on your personal best peak flow number. The zones will help you check your asthma and take the right actions to keep it controlled. The colors used with each zone come from the traffic light.



• **Green Zone** (80 to 100 percent of your personal best) signals **good control**. Take your usual daily long-term-control medicines, if you take any. Keep taking these medicines even when you are in the yellow or red zones.



• **Yellow Zone** (50 to 79 percent of your personal best) signals **caution: your asthma is getting worse**. Add quick-relief medicines. You might need to increase other asthma medicines as directed by your doctor.



• **Red Zone** (below 50 percent of your personal best) signals **medical alert!** Add or increase quick-relief medicines and call your doctor **now**.

Starting Out: Find Your Personal Best Peak Flow Number

To find your personal best peak flow number, take your peak flow each day for 2 to 3 weeks. Your asthma should be under good control during this time. Take your peak flow as close to the times listed below as you can. (These times for taking your peak flow are only for finding your personal best peak flow. To check your asthma each day, you will take your peak flow in the morning. This is discussed on the next page.)

- Between noon and 2:00 p.m. each day.
- Each time you take your quick-relief medicine to relieve symptoms. (Measure your peak flow **after** you take your medicine.)
- Any other time your doctor suggests.

Write down the number you get for each peak flow reading. The highest peak flow number you had during the 2 to 3 weeks is your personal best.

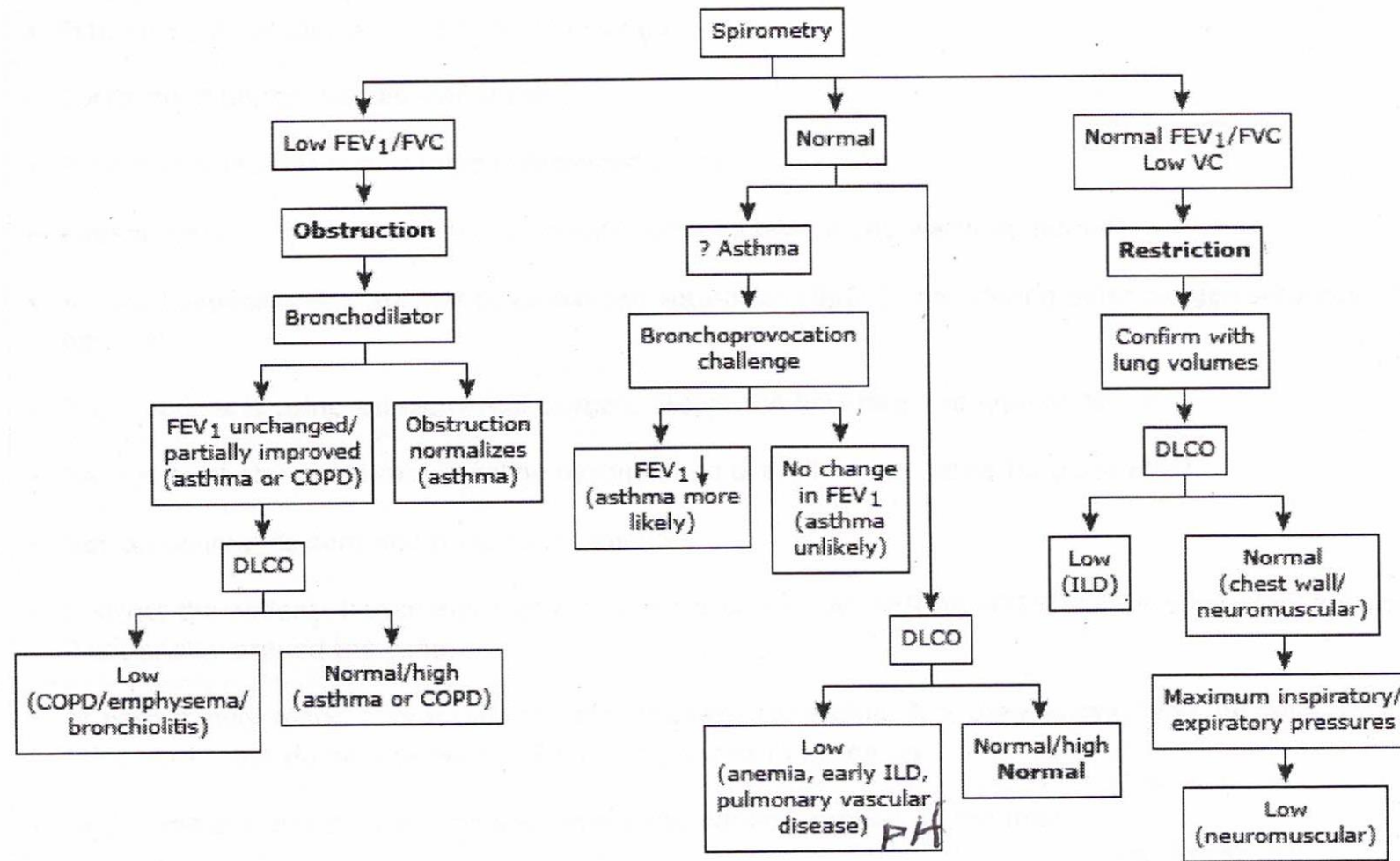
Your personal best can change over time. Ask your doctor when to check for a new personal best.

Ask Your Doctor To Write An Action Plan For You That Tells You:

- The peak flow numbers for **your** green, yellow, and red zones. Mark the zones on your peak flow meter with colored tape or a marker.
- The medicines you should take while in each peak flow zone.

Source: Practical Guide for the Diagnosis and Management of Asthma. Based on the Expert Panel Report 2: Guidelines for the Diagnosis and Management of Asthma. Bethesda, MD: National Institutes of Health, National Heart, Lung, and Blood Institute; October 1997. NIH Publication No. 97-4053. <http://www.nhlbi.nih.gov/health/prof/lung/asthma/practgde/practgde.pdf>. Accessed September 17, 2007.

Algorithm for pulmonary function test interpretation



COPD: chronic obstructive pulmonary disease; DLCO: diffusing capacity for carbon dioxide; FEV₁: forced expiratory volume in one second; FVC: forced vital capacity; VC: vital capacity; ILD: interstitial lung disease.

Enter Name _____
Enter Address _____
Enter City/State/Zip _____

Today's Date: _____
Patient's Name: _____

FOR PATIENTS:

Take the Asthma Control Test™ (ACT) for people 12 yrs and older.
Know your score. Share your results with your doctor.

Step 1 Write the number of each answer in the score box provided.

Step 2 Add the score boxes for your total.

Step 3 Take the test to the doctor to talk about your score.

1. In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school or at home?	All of the time	1	Most of the time	2	Some of the time	3	A little of the time	4	None of the time	5	SCORE	
2. During the past 4 weeks, how often have you had shortness of breath?	More than once a day	1	Once a day	2	3 to 6 times a week	3	Once or twice a week	4	Not at all	5		
3. During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?	4 or more nights a week	1	2 or 3 nights a week	2	Once a week	3	Once or twice	4	Not at all	5		
4. During the past 4 weeks, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?	3 or more times per day	1	1 or 2 times per day	2	2 or 3 times per week	3	Once a week or less	4	Not at all	5		
5. How would you rate your asthma control during the past 4 weeks?	Not controlled at all	1	Poorly controlled	2	Somewhat controlled	3	Well controlled	4	Completely controlled	5		
											TOTAL	

Copyright 2002, by QualityMetric Incorporated.
Asthma Control Test is a trademark of QualityMetric Incorporated.

If your score is 19 or less, your asthma may not be controlled as well as it could be.
Talk to your doctor.

FOR PHYSICIANS:

The ACT is:

- A simple, 5-question tool that is self-administered by the patient
- Clinically validated by specialist assessment and spirometry¹
- Recognized by the National Institutes of Health

ICD-10CC Code**Description**

J45.2x

mild intermittent

J45.3x

mild persistent

J45.4x

moderate persistent

J45.5x

severe persistent

J45.90x

unspecified

X=0 uncomplicated

X=1 with exacerbation

X=2 with status

J45.990 exercise induced bronchospasm

J45.991 cough variant asthma

J45.998 other asthma

R05

Cough

R06.00

Dyspnea

R06.01

Orthopnea

R06.02

Shortness of breath

R06.09

Other forms of dyspnea

R06.1

Stridor

R06.2

Wheezing

Pulmonary Function Testing

A major revision of PFT codes occurred in 2012. Below are some of the codes and restrictions that resulted in that change.

- ❖ **94010** – Spirometry, including graphic record, total and timed vital capacity, expiratory flow rate measurement(s), with or without maximal voluntary ventilation.
(Do not report 94010 with 94150, 94200, 94375, 94728)
- ❖ **94060** – Bronchodilation responsiveness, spirometry as in 94010, pre- and post-bronchodilator administration
(Do not report 94060 with 94150, 94200, 94375, 94640, 94728)
(Report bronchodilator supply separately with 99070 or appropriate supply code)
- ❖ **94150** - Vital Capacity, total (separate procedure)
(Do not report 94150 with 94010, 94060, 94728)
- ❖ **94200** – Maximum breathing capacity, maximal voluntary ventilation
(Do not report 94200 with 94010, 94060)
- ❖ **94375** – Respiratory Flow Volume loop
(Do not report 94375 with 94010, 94060, 94728)
- ❖ **94726** – Plethysmography for determination of lung volumes and, when performed, airway resistance
(Do not report 94726 in conjunction with 94727, 94728)
- ❖ **94727** – Gas dilution or washout for determination of lung volumes and, when performed, distribution of ventilation and closing volumes
(Do not report 94727 in conjunction with 94726)
- ❖ **94728** – Airway resistance by impulse oscillometry
(Do not report 94728 in conjunction with 94010, 94060, 94070, 94375, 94726)
- ❖ **94729** – Diffusing capacity (e.g., carbon monoxide, membrane) (List separately in addition to code for primary procedure)
(Report 94729 in conjunction with 94010, 94060, 94070, 94375, 94726-94728)

ASTHMA SEVERITY

- ▶ Asthma is classified by severity but this can change over time
- ▶ Severity depends on underlying disease and its response to treatment
- ▶ Asymptomatic can be: mild intermittent asthma or severe persistent asthmatic on full medication treatment along with oral steroids




Components of Severity		Classification of Asthma Severity ≥12 years of age			
		Intermittent	Persistent		
			Mild	Moderate	Severe
Impairment Normal FEV ₁ /FVC: 8–19 yr 85% 20–39 yr 80% 40–59 yr 75% 60–80 yr 70%	Symptoms	≤2 days/week	>2 days/week but not daily	Daily	Throughout the day
	Nighttime awakenings	≤2x/month	3–4x/month	>1x/week 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 daily, and not more than 1x on any day	Daily	Several times per day
	Interference with normal activity	None	Minor limitation	Some limitation	Extremely limited
	Lung function	<ul style="list-style-type: none">• Normal FEV₁ between exacerbations• FEV₁ >80% predicted• FEV₁/FVC normal	<ul style="list-style-type: none">• FEV₁ >80% predicted• FEV₁/FVC normal	<ul style="list-style-type: none">• FEV₁ >60% but <80% predicted• FEV₁/FVC reduced 5%	<ul style="list-style-type: none">• FEV₁ <60% predicted• FEV₁/FVC reduced >5%
Risk	Exacerbations requiring oral systemic corticosteroids	0–1/year (see note)	≥2/year (see note) 		
		 Consider severity and interval since last exacerbation.  Frequency and severity may fluctuate over time for patients in any severity category. Relative annual risk of exacerbations may be related to FEV ₁ .			
Recommended Step for Initiating Treatment (See “Stepwise Approach for Managing Asthma” for treatment steps.)		Step 1	Step 2	Step 3 and consider short course of oral systemic corticosteroids	Step 4 or 5
		In 2–6 weeks, evaluate level of asthma control that is achieved and adjust therapy accordingly.			

FIGURE 11. CLASSIFYING ASTHMA SEVERITY AND INITIATING THERAPY IN CHILDREN

Components of Severity		Classifying Asthma Severity and Initiating Therapy in Children							
		Intermittent		Persistent					
				Mild		Moderate		Severe	
				Ages 0–4	Ages 5–11	Ages 0–4	Ages 5–11	Ages 0–4	Ages 5–11
Impairment	Symptoms	≤2 days/week		>2 days/week but not daily		Daily		Throughout the day	
	Nighttime awakenings	0	≤2x/month	1–2x/month	3–4x/month	3–4x/month	>1x/week but not nightly	>1x/week	Often 7x/week
	Short-acting beta ₂ -agonist use for symptom control	≤2 days/week		>2 days/week but not daily		Daily		Several times per day	
	Interference with normal activity	None		Minor limitation		Some limitation		Extremely limited	
	Lung Function								
	• FEV ₁ (predicted) or peak flow (personal best)	N/A	Normal FEV ₁ between exacerbations >80%	N/A	>80%	N/A	60–80%	N/A	<60%
	• FEV ₁ /FVC		>85%		>80%		75–80%		<75%
Risk	Exacerbations requiring oral systemic corticosteroids (consider severity and interval since last exacerbation)	0–1/year (see notes)		≥2 exacerbations in 6 months requiring oral systemic corticosteroids, or ≥4 wheezing episodes/1 year lasting >1 day AND risk factors for persistent asthma	≥2x/year (see notes) Relative annual risk may be related to FEV ₁				
Recommended Step for Initiating Therapy (See “Stepwise Approach for Managing Asthma” for treatment steps.) The stepwise approach is meant to assist, not replace, the clinical decisionmaking required to meet individual patient needs.		Step 1 (for both age groups)		Step 2 (for both age groups)		Step 3 and consider short course of oral systemic corticosteroids	Step 3: medium-dose ICS option and consider short course of oral systemic corticosteroids	Step 3 and consider short course of oral systemic corticosteroids	Step 3: medium-dose ICS option OR step 4 and consider short course of oral systemic corticosteroids
		In 2–6 weeks, depending on severity, evaluate level of asthma control that is achieved. • Children 0–4 years old: If no clear benefit is observed in 4–6 weeks, stop treatment and consider alternative diagnoses or adjusting therapy. • Children 5–11 years old: Adjust therapy accordingly.							

Key: FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity; ICS, inhaled corticosteroids; ICU, intensive care unit; N/A, not applicable

Notes:

- Level of severity is determined by both impairment and risk. Assess impairment domain by caregiver's recall of previous 2–4 weeks. Assign severity to the most severe category in which any feature occurs.
- Frequency and severity of exacerbations may fluctuate over time for patients in any severity category. At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma severity. In general, more frequent and severe exacerbations (e.g., requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate greater underlying disease severity. For treatment purposes, patients with ≥2 exacerbations described above may be considered the same as patients who have persistent asthma, even in the absence of impairment levels consistent with persistent asthma.

FIGURE 15. ASSESSING ASTHMA CONTROL AND ADJUSTING THERAPY IN YOUTHS ≥12 YEARS OF AGE AND ADULTS

Components of Control		Classification of Asthma Control (≥12 years of age)		
		Well Controlled	Not Well Controlled	Very Poorly Controlled
Impairment	Symptoms	≤2 days/week	>2 days/week	Throughout the day
	Nighttime awakenings	≤2x/month	1–3x/week	≥4x/week
	Interference with normal activity	None	Some limitation	Extremely limited
	Short-acting beta 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 requiring oral systemic corticosteroids	0–1/year	≥2/year (see note)	
		Consider severity and interval since last exacerbation		
	Progressive loss of lung function	Evaluation requires long-term followup care.		
	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 “Stepwise Approach for Managing Asthma” for treatment steps.)		<ul style="list-style-type: none">• Maintain current step.• Regular followup at every 1–6 months to maintain control.• Consider step down if well controlled for at least 3 months.	<ul style="list-style-type: none">• Step up 1 step.• Reevaluate in 2–6 weeks.• For side effects, consider alternative treatment options.	<ul style="list-style-type: none">• Consider short course of oral systemic corticosteroids.• Step up 1–2 steps.• Reevaluate in 2 weeks.• For side effects, consider alternative treatment options.

*ACQ values of 0.76–1.4 are indeterminate regarding well-controlled asthma.

Key: EIB, exercise-induced bronchospasm; ICU, intensive care unit

Notes:

- The stepwise approach is meant to assist, not replace, the clinical decisionmaking required to meet individual patient needs.
- The level of control is based on the most severe impairment or risk category. Assess impairment domain by patient'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.
- At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma control. In general, more frequent and intense exacerbations (e.g., requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate poorer disease control. For treatment purposes, patients who had ≥2 exacerbations requiring oral systemic corticosteroids in the past year may be considered the same as patients who have not-well-controlled asthma, even in the absence of impairment levels consistent with not-well-controlled asthma.

ATAQ = Asthma Therapy Assessment Questionnaire[®]

ACQ = Asthma Control Questionnaire[®]

ACT = Asthma Control Test[™]

Minimal Important

Difference: 1.0 for the ATAQ; 0.5 for the ACQ; not determined for the ACT.

Before step up in therapy:

— Review adherence to medication, inhaler technique, environmental control, and comorbid conditions.

— If an alternative treatment option was used in a step, discontinue and use the preferred treatment for that step.

FIGURE 12. ASSESSING ASTHMA CONTROL AND ADJUSTING THERAPY IN CHILDREN

Components of Control		Assessing Asthma Control and Adjusting Therapy in Children					
		Well Controlled		Not Well Controlled		Very Poorly Controlled	
		Ages 0-4	Ages 5-11	Ages 0-4	Ages 5-11	Ages 0-4	Ages 5-11
Impairment	Symptoms	≤2 days/week but not more than once on each day		>2 days/week or multiple times on ≤2 days/week		Throughout the day	
	Nighttime awakenings	≤1x/month		>1x/month	≥2x/month	>1x/week	≥2x/week
	Interference with normal activity	None		Some limitation		Extremely limited	
	Short-acting beta ₂ -agonist use for symptom control (not prevention of EIB)	≤2 days/week		>2 days/week		Several times per day	
	Lung function <ul style="list-style-type: none">FEV₁ (predicted) or peak flow personal bestFEV₁/FVC	N/A	>80% >80%	N/A	60-80% 75-80%	N/A	<60% <75%
Risk	Exacerbations requiring oral systemic corticosteroids	0-1x/year		2-3x/year	≥2x/year	>3x/year	≥2x/year
	Reduction in lung growth	N/A	Requires long-term followup	N/A		N/A	
	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 "Stepwise Approach for Managing Asthma" for treatment steps.) The stepwise approach is meant to assist, not replace, clinical decisionmaking required to meet individual patient needs.		<ul style="list-style-type: none">Maintain current step.Regular followup every 1-6 months.Consider step down if well controlled for at least 3 months.		Step up 1 step	Step up at least 1 step	<ul style="list-style-type: none">Consider short course of oral systemic corticosteroids.Step up 1-2 steps	
		<ul style="list-style-type: none">Before step up: Review adherence to medication, inhaler technique, and environmental control. If alternative treatment was used, discontinue it and use preferred treatment for that step.Reevaluate the level of asthma control in 2-6 weeks to achieve control; every 1-6 months to maintain control. Children 0-4 years old: If no clear benefit is observed in 4-6 weeks, consider alternative diagnoses or adjusting therapy. Children 5-11 years old: Adjust therapy accordingly.For side effects, consider alternative treatment options.					

Key: EIB, exercise-induced bronchospasm; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity; ICU, intensive care unit; N/A, not applicable

Notes:

- The level of control is based on the most severe impairment or risk category. Assess impairment domain by patient's or caregiver's recall of previous 2–4 weeks. Symptom assessment for longer periods should reflect a global assessment, such as whether the patient's asthma is better or worse since the last visit.
- At present, there are inadequate data to correspond frequencies of exacerbations with different levels of asthma control. In general, more frequent and intense exacerbations (e.g., requiring urgent, unscheduled care, hospitalization, or ICU admission) indicate poorer disease control.