

WEST OAKLAND MIDDLE SCHOOL COMPREHENSIVE ASTHMA SCREENING & EDUCATION PROGRAM

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OBJECTIVES

1. Discuss the components of a comprehensive SBHC asthma program and the steps needed to organize a similar screening and education program
2. Integrate national guidelines for using hand held spirometry screening into a comprehensive asthma program in a high risk SBHC.
3. Analyze lessons learned from our program that will be useful to other SBHC implementing comprehensive asthma care



OUTLINE

1. The Community Setting
 - a. West Oakland/Port of Oakland
 - b. Asthma in Alameda County
 - c. West Oakland Middle School Health Center (WOMSHC)
 - d. Partnerships



OUTLINE

2. Asthma Overview
 - a. What it is
 - b. Symptoms
 - c. Who gets it
 - d. What triggers attacks
 - e. How it is treated



OUTLINE

3. Development of the WOMS Comprehensive Asthma Screening and Education Program
 - a. Student identification
 - b. Classes
 - c. Spirometry



OUTLINE

4. WOMS Asthma Cohort
 - a. Our data to date
 - b. What we have learned
 - c. Limitations/ Challenges



BRIEF HISTORY OF WEST OAKLAND

- San Francisco harbor & West Oakland ports
- 1869...Central Pacific Railroad Company



The original CPRR roundhouse at the West Oakland railroad yards and shops in the 1870s. (Photo courtesy of Bancroft Library)



BRIEF HISTORY OF WEST OAKLAND

- Golden Age (1911)
 - Wartime industry WWI
 - Booming railway
 - Thriving city
 - Pollution
- Great Depression (1929-1938)
 - Failing companies
 - High rates of unemployment
 - Housing deteriorated
 - Dust Bowl Refugees



BRIEF HISTORY OF WEST OAKLAND

- WWII (1939-1945)
 - Railways being utilized again
 - Poorly maintained houses bulldozed
 - First housing projects built up
 - Army base and Naval Supply constructed
 - More pollution



BRIEF HISTORY OF WEST OAKLAND

- After WWII
 - America changed the way it traveled and moved goods
 - Shift from railway to highway
 - Diesel trucks
 - Cypress freeway constructed through West Oakland
 - Isolated designated slums
 - Continued to increase pollution



WEST OAKLAND TODAY

West Oakland Area Map



WEST OAKLAND TODAY

- Oakland has 5th largest shipping port
- Ports are being utilized daily
 - Heavy duty trucks, ships, harbor crafts, locomotives and cargo handling equipment
- Trucks are the highest source of diesel emission in West Oakland.
- Toxic air contaminant trends
 - Ozone, carbon dioxide, sulfur dioxide, nitrogen oxides, lead and particulate matter
 - Can contribute to a wide range of health effects

WEST OAKLAND TODAY

- In 2005, West Oakland had almost 3x higher than average background diesel in Bay Area
 - “West Oakland residents breathe air that contains 3x more diesel particles than in the rest of the bay area...”
- West Oakland still has episodes of air pollution at levels above state and federal standards



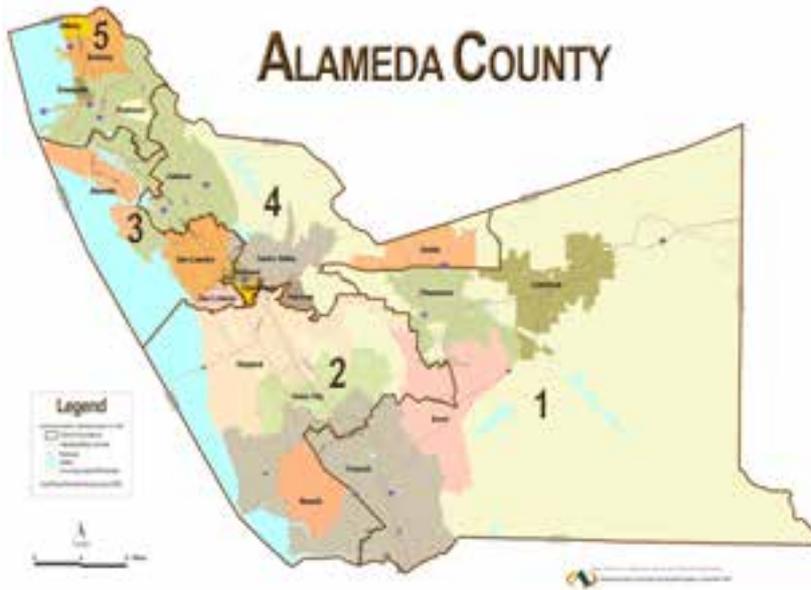
1994 WEST OAKLAND DEMOGRAPHICS

○ Economics

- Wealth decrease over the years
- Unemployment average 21.5%
- Median Income \$13,123
- 35% of population lived below poverty line
- Community of renters
- 15% of population own home
- West Oakland has one of the highest levels of poverty

○ Mostly African Americans





HISTORY OF ASTHMA

Over 256,000 children and adults diagnosed with asthma.

Lifetime Asthma Prevalence Ages 5-17

Alameda County: 23.2%

California: 17.1%

Active Asthma Ages 5-17

Alameda County: 16.8%

California: 11.6%



EMERGENCY DEPARTMENT VISITS/ HOSPITALIZATIONS RELATED TO ASTHMA IN 2012

- Emergency Department Visits Ages 0-17 (per 10,000)
 - Alameda County: 84.06
 - California: 79.4

- Asthma Hospitalizations Ages 0-17 (per 10,000)
 - Alameda County: 22.2
 - California: 11.7
 - Alameda County has the highest rate of hospitalizations due to asthma

RISK FACTORS IN ALAMEDA COUNTY

- Adults who smoke: 11%
- Adults & children exposed to second hand smoke: 7.4%
- Families living under federal poverty: 10.8%
- Unemployment Rate: 10.7



WEST OAKLAND MIDDLE SCHOOL (WOMS)

- Approx 220 students enrolled
- Over 50 students with confirmed asthma
- Many more with breathing issues



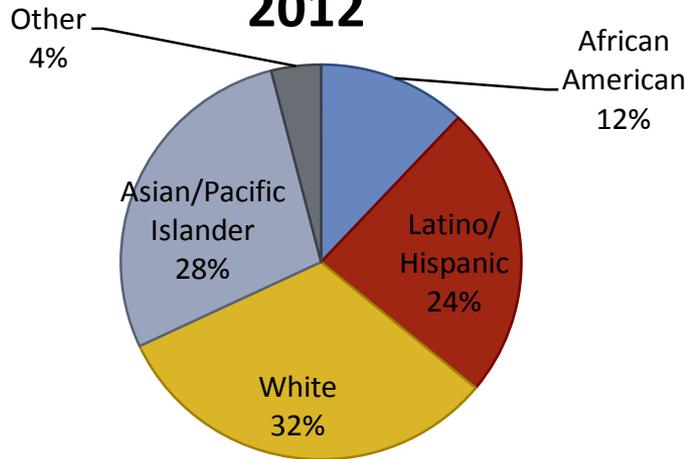
OAKLAND UNIFIED SCHOOL DISTRICT (OUSD)

In 2010...

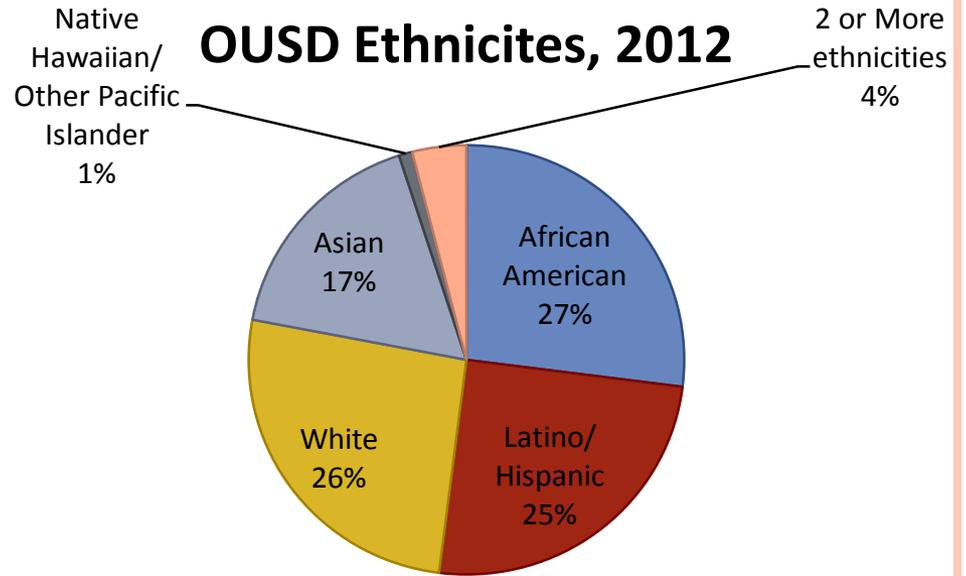
- Child poverty rate 32.7%
- By 9th grade only 19% of OUSD students met state mandated healthy fitness zone criteria.
 - CA students at 39%
 - 37% of African American students overweight
 - 41% Latino students overweight

ETHNICITIES

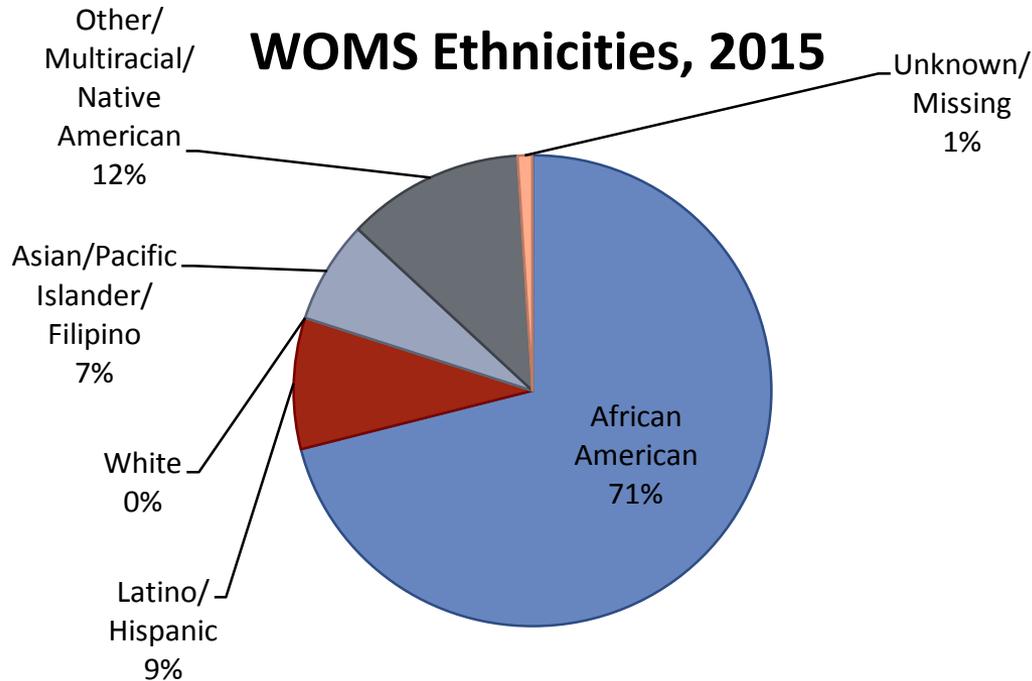
Alameda County Ethnicities, 2012



OUSD Ethnicities, 2012



WOMS Ethnicities, 2015



West Oakland Middle School
991 14th Street Oakland, CA 94607



WOMS GARDEN



RHYMES WITH ORANGE Hilary B. Price

THE GALACTIC EMPIRE,
if only...
Strip down to your undies,
put on the johnny and I'll be back in a few

THE LABORED BREATH,
THE FEELING OF IMPENDING DOOM--
USE THIS AND YOU'LL FEEL LIKE A BRAND-NEW PERSON.

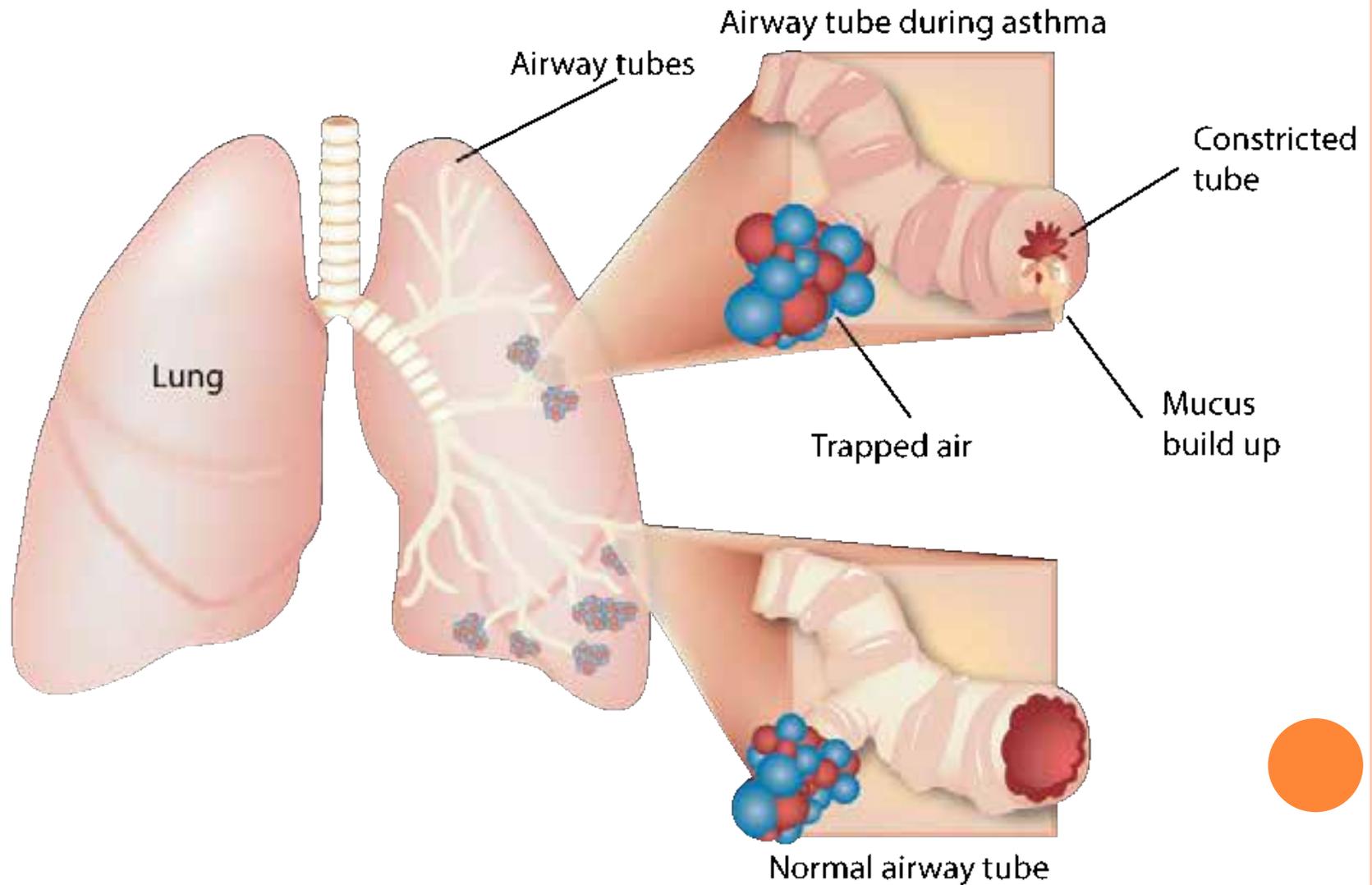


COMMUNITY PARTNERSHIPS

- AmeriCorps
- LifeLong Medical Care
- UCSF/Elev8
- OUSD

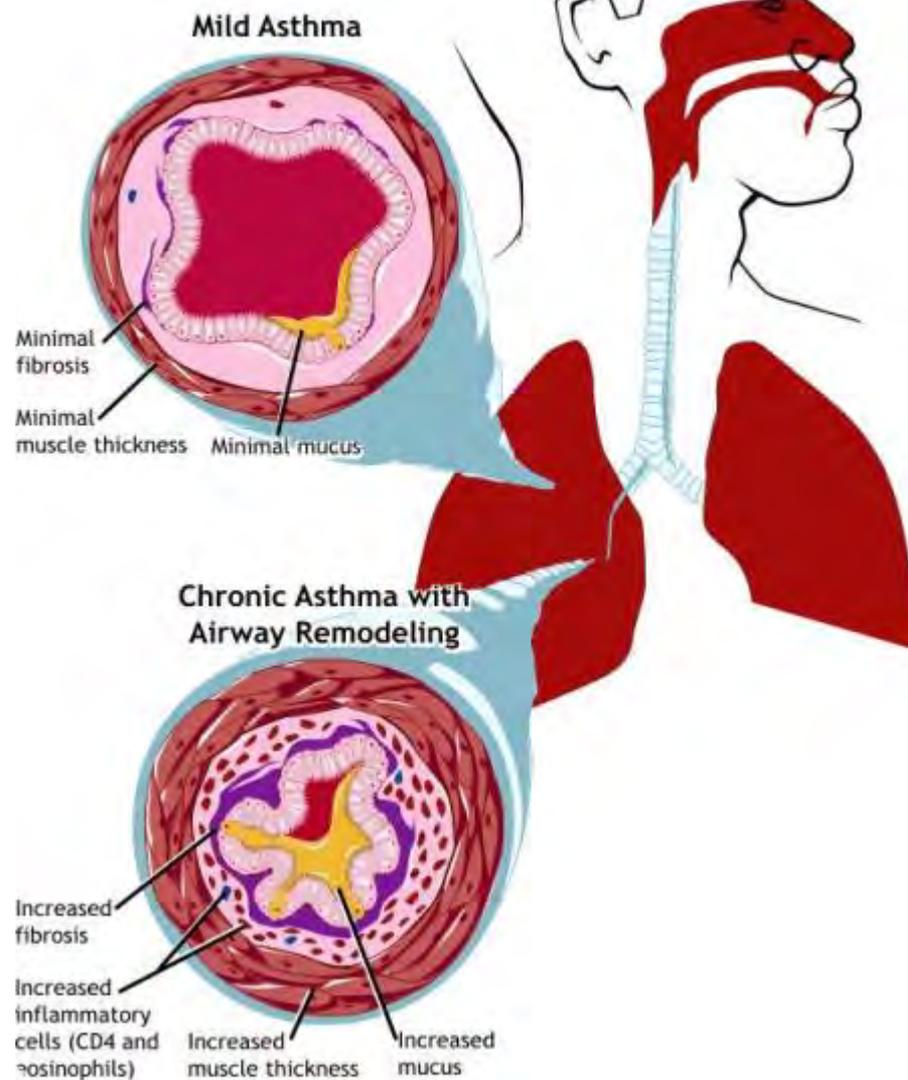


WHAT IS ASTHMA?



VARIATIONS OF ASTHMA

EXERCISE INDUCED





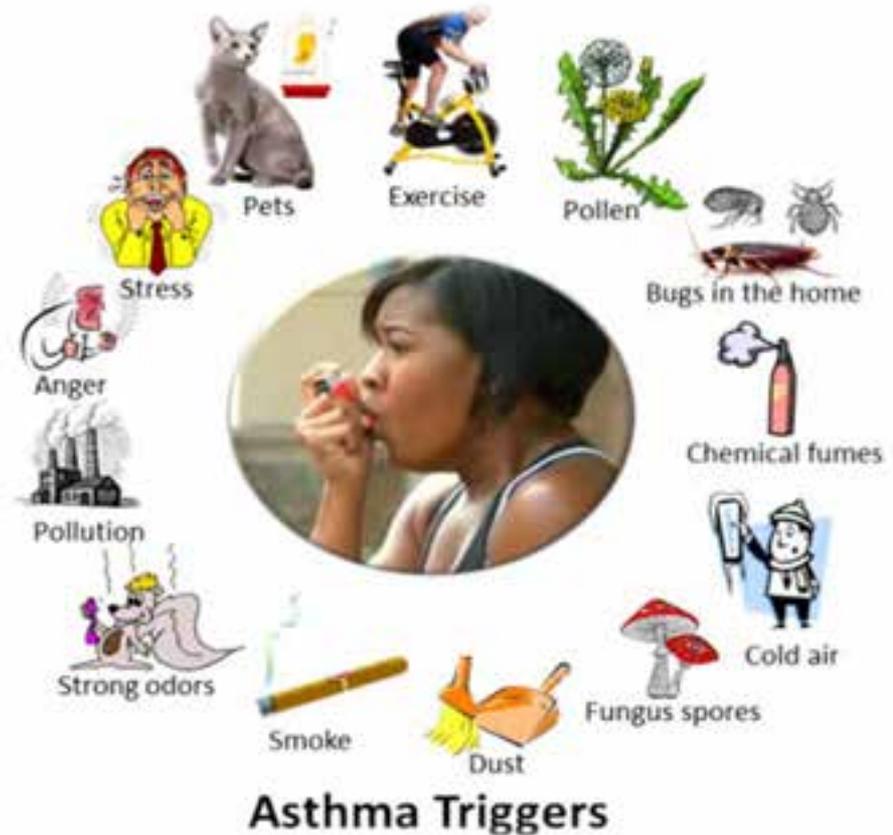
ASTHMA

SYMPTOMS:

- Wheezing
- Cough
- Chest Tightness
- Shortness of Breath

FACTORS:

- Genetics
- Occupational exposures
- Environmental exposures



TRIGGERING FACTORS

Inflammation



Constriction

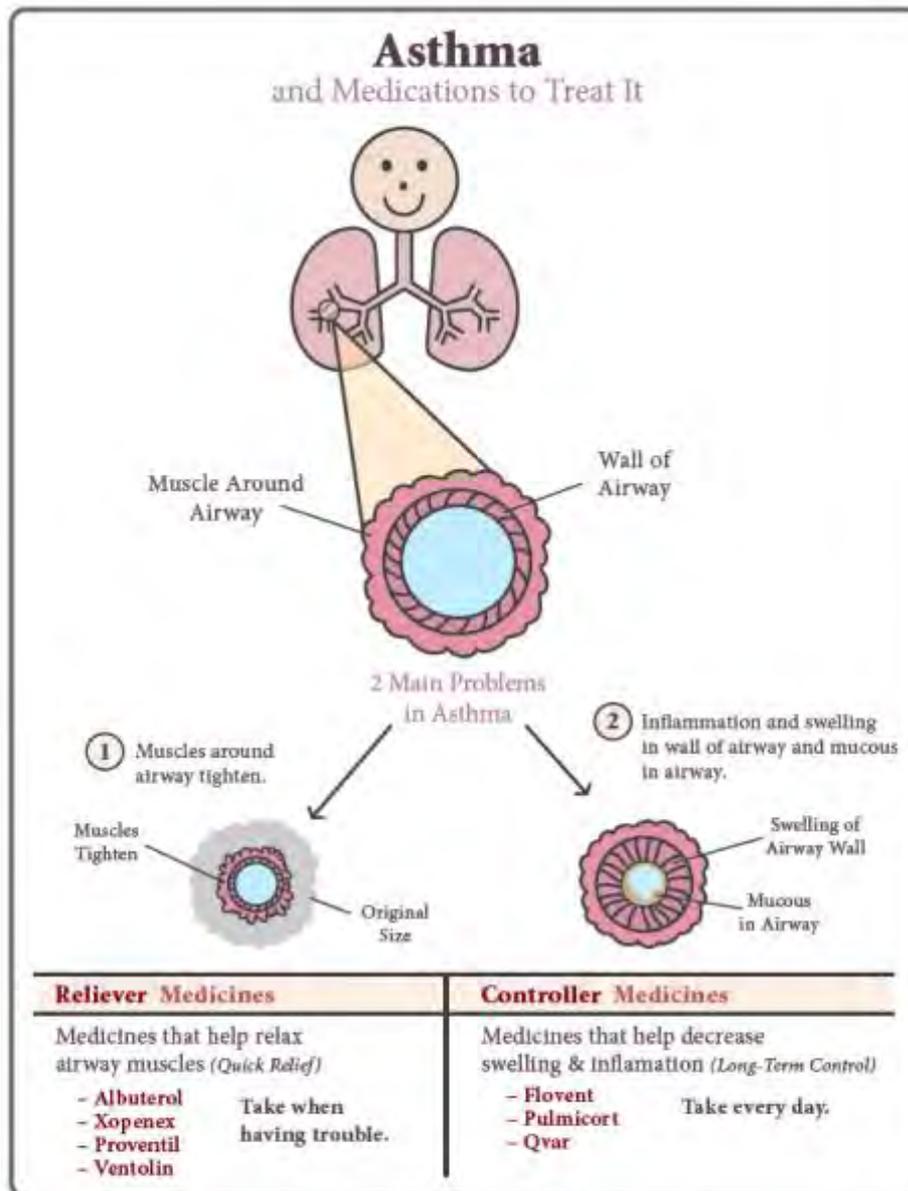


Others



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TREATMENT



Asthma Inhalers

Sept. Edition • 2007

 includes built-in dose counter

Inhaled Bronchodilators

Short-acting bronchodilators relax tight airways. Inhaled corticosteroids, combination inhalers and long-acting bronchodilators relax the tight airways of asthma, reducing coughing, wheezing, choking and shortness of breath.

Short-Acting Inhaled Bronchodilators (3-6 hours)

- Albuterol (generic)** HFA inhaler
- Alupent** HFA inhaler
- Atrovent** HFA inhaler
- Combivent** Inhaler
- Mexair Autohaler** Inhaler
- ProAir HFA** Inhaler
- Proventil HFA** Inhaler
- Ventolin HFA** Inhaler
- Xopenex HFA** Inhaler

Inhaled Anti-Inflammatories

Inhaled corticosteroids and other anti-inflammatory inhalers and certain long-acting beta-agonists relax the tight airways of asthma. They also help reduce inflammation that can worsen asthma over time.

Long-Acting Inhaled Bronchodilators (12 hours)

- Formoterol AEROLIS** Inhaler
- Servent Diskus** Inhaler

Inhaled Anti-Inflammatories

- Advair Diskus** Inhaler
- Advair HFA** Inhaler
- Asmanex Twisthaler** Inhaler
- Asmanex** Inhaler
- Flovent Diskus** Inhaler
- Flovent HFA** Inhaler
- Intal** Inhaler

Combination Medications

Combination medications contain both long-acting bronchodilators and inhaled corticosteroids components.

Combination Medications

- Aerolide, Aerolide 48** Inhaler
- Asmanex Twisthaler** Inhaler
- Asmanex** Inhaler
- Advair Diskus** Inhaler
- Advair HFA** Inhaler
- Symbicort (HFA)** Inhaler
- Pulmicort Flashhaler** Inhaler
- QVAR (HFA)** Inhaler

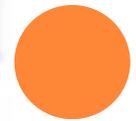


FIGURE 3: ASSESSING ASTHMA CONTROL AND ADJUSTING THERAPY IN PATIENTS ≥12 YEARS OF AGE

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.

Source: NIH, National Heart, Lung and Blood Institute. Expert Panel Report 3: Guidelines for the Diagnosis and Management of Asthma (EPR-3 2007). <http://www.nhlbi.nih.gov/guidelines/asthma/index.htm>.

WOMS COMPREHENSIVE ASTHMA SCREENING AND EDUCATION PROGRAM

DEVELOPMENT AND PROCESS

- Partner with UCSF/Elev8
 - UCSF Elev8 Healthy Students & Families grant
- Collaboration with Children's Hospital Oakland Asthma Clinic
 - Easy One spirometer and demo
- University of Washington Training
 - www.spirometry360.org
 - Program includes with current prices:
 - Spirometry Fundamentals (\$80 online)
 - Spirometry Learning Lab (\$150 & includes above)
 - Spirometry Feed back X 6 mo. (\$1200 full program if using ndd EasyOne spirometer or \$1500 all other brands)



WOMS ASTHMA GROUP

IDENTIFICATION/SELECTION

- OUSD School Nurse: list of already diagnosed
- WOMS Coach: Not diagnosed but asthma symptom complaints
- Other students seen for respiratory complaints
- Students who think they might have asthma

CURRICULUM

- Developed & taught to students by WOMS AmeriCorps Worker
- Asthma Education classes
 - Spring 2014 for 2013-2014 school year.
 - Fall 2014 for 2014-2015 school year



WOMS ASTHMA GROUP

EVALUATION/MANAGEMENT

- Visit with provider
 - ACT, Spirometry
- Medication Management
- Asthma Action Plans





“Do the particulates in the air
seem extra large today?”



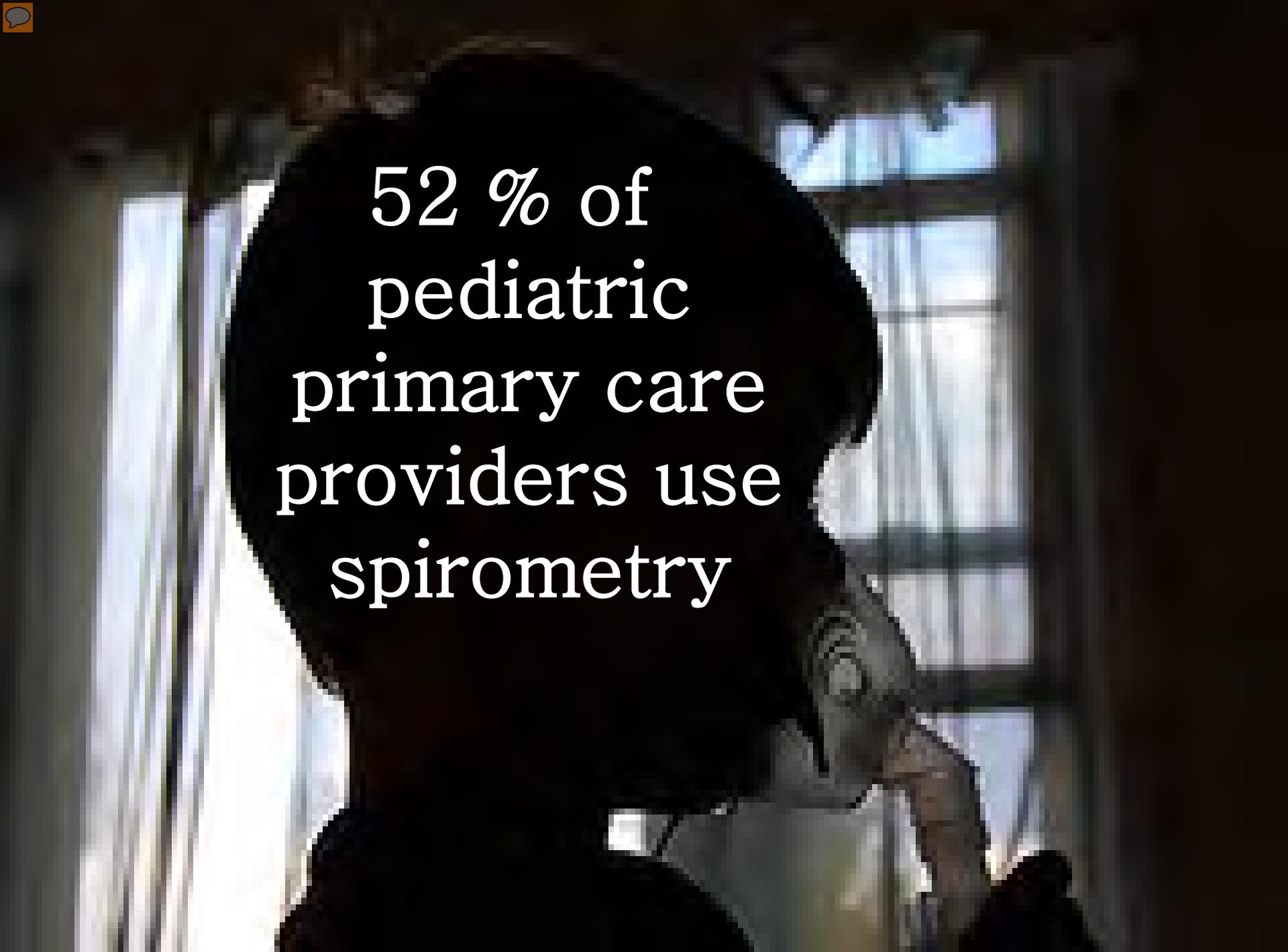
History and physical examination alone are not reliable to accurately diagnose or rule out asthma

- National Asthma Education and Prevention Program (NAEPP) and Global Initiative for Asthma (GINA)

B6

EXAM
ROOM B6

02323

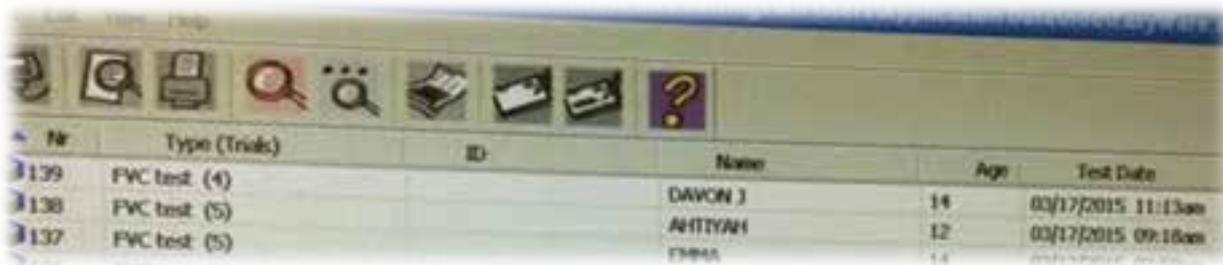
A person wearing a white lab coat is shown from the chest up, holding a large, black, circular speech bubble. The speech bubble contains white text. The background is a blurred indoor setting with windows and curtains.

52 % of
pediatric
primary care
providers use
spirometry

Performing Spirometry Protocol

Performing & Interpreting Spirometry:
Understanding & Implementing the
ATS/ERS Guidelines at WOMMS
Approach to the Patient

(Refer to handout)



The screenshot shows a software interface with a toolbar at the top containing icons for search, print, zoom, and help. Below the toolbar is a table with the following data:

Nr	Type (Trials)	ID	Name	Age	Test Date
139	FVC test (4)		DAVON J	14	03/17/2015 11:13am
138	FVC test (5)		AHTIYWI	12	03/17/2015 09:16am
137	FVC test (5)		EMMA	14	03/17/2015 09:16am



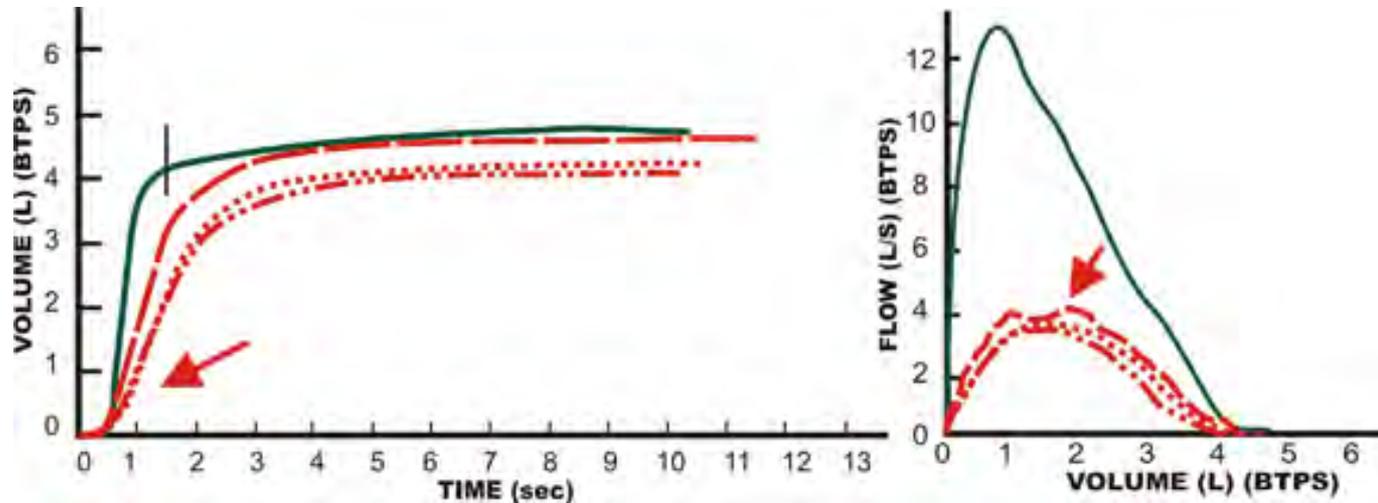


MOST KIDS CAN PERFORM ACCEPTABLE SPIROMETRY



3 COMMON SPIROMETRY ERRORS

1. Weak Effort
2. Short Effort
3. Lack of reproducibility



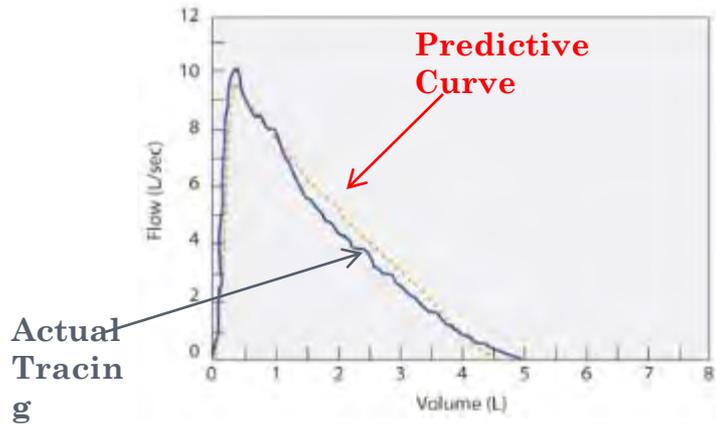
Example of “Weak Effort” Spirometry Result





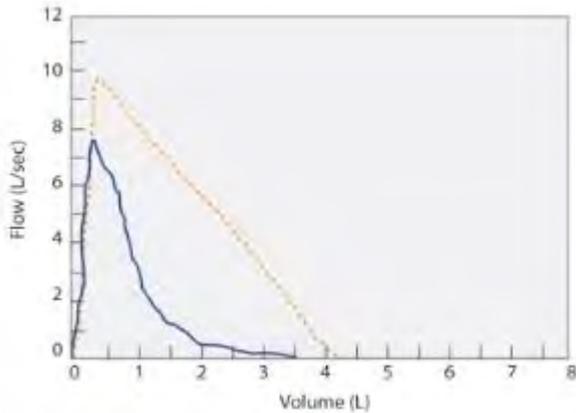
SPIROMETRY INTERPRETATION

Normal **>80%** of predicted values

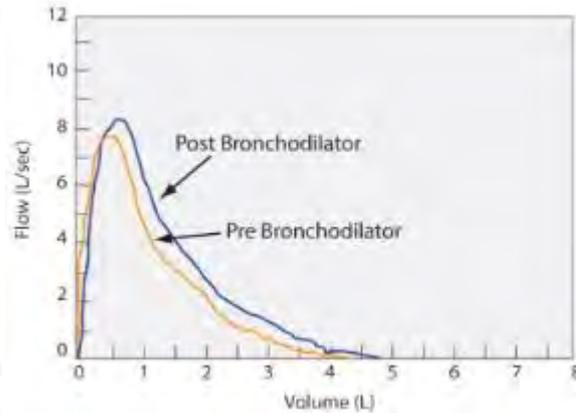


Normal

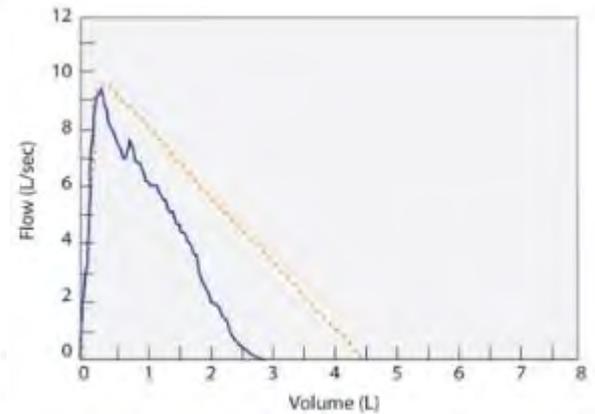
	Obstructive Disease	Restrictive Disease
FVC	Normal or ↓ severe	↓
FEV1	↓	Normal or ↓
FEV1/FVC	↓	Normal, ↑ or ↓



Obstructive Disease



Bronchodilator Response



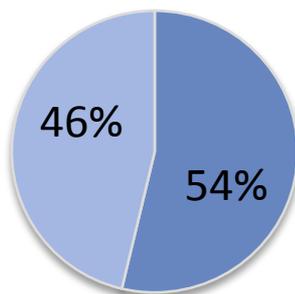
Restrictive Disease

WOMS ASTHMA GROUP DEMOGRAPHICS

N = 41 Age Range: 11-14 years (mean age 12.2 years)

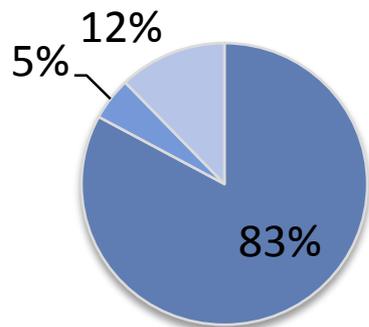
Gender

■ Male ■ Female



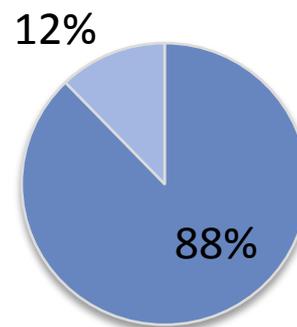
Asthma

■ Yes ■ No ■ Maybe



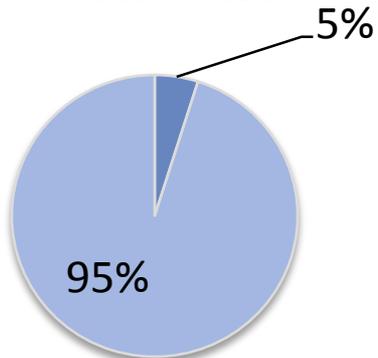
Ethnicity

■ African American ■ Hispanic



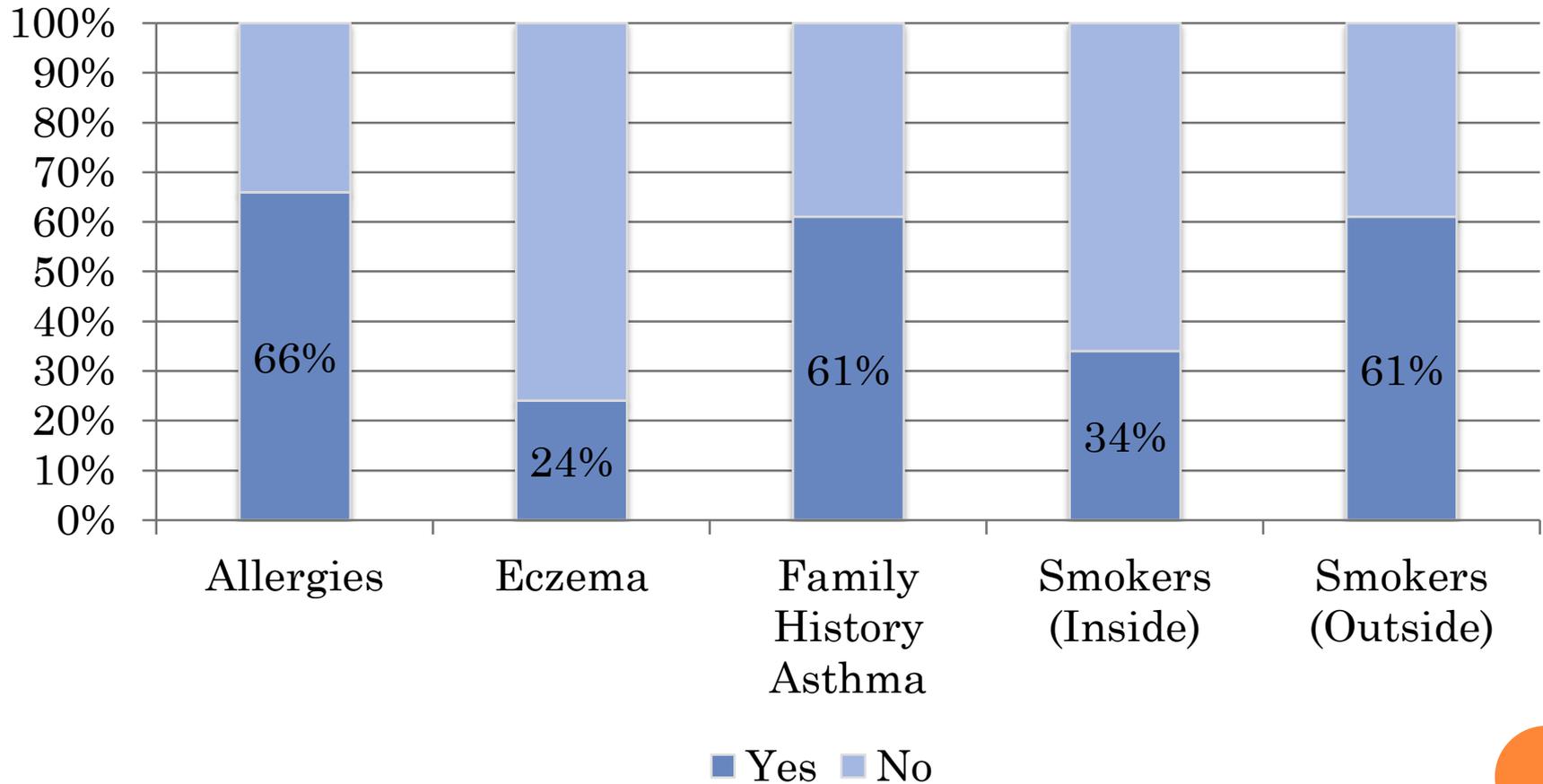
Smoker

■ Yes ■ No

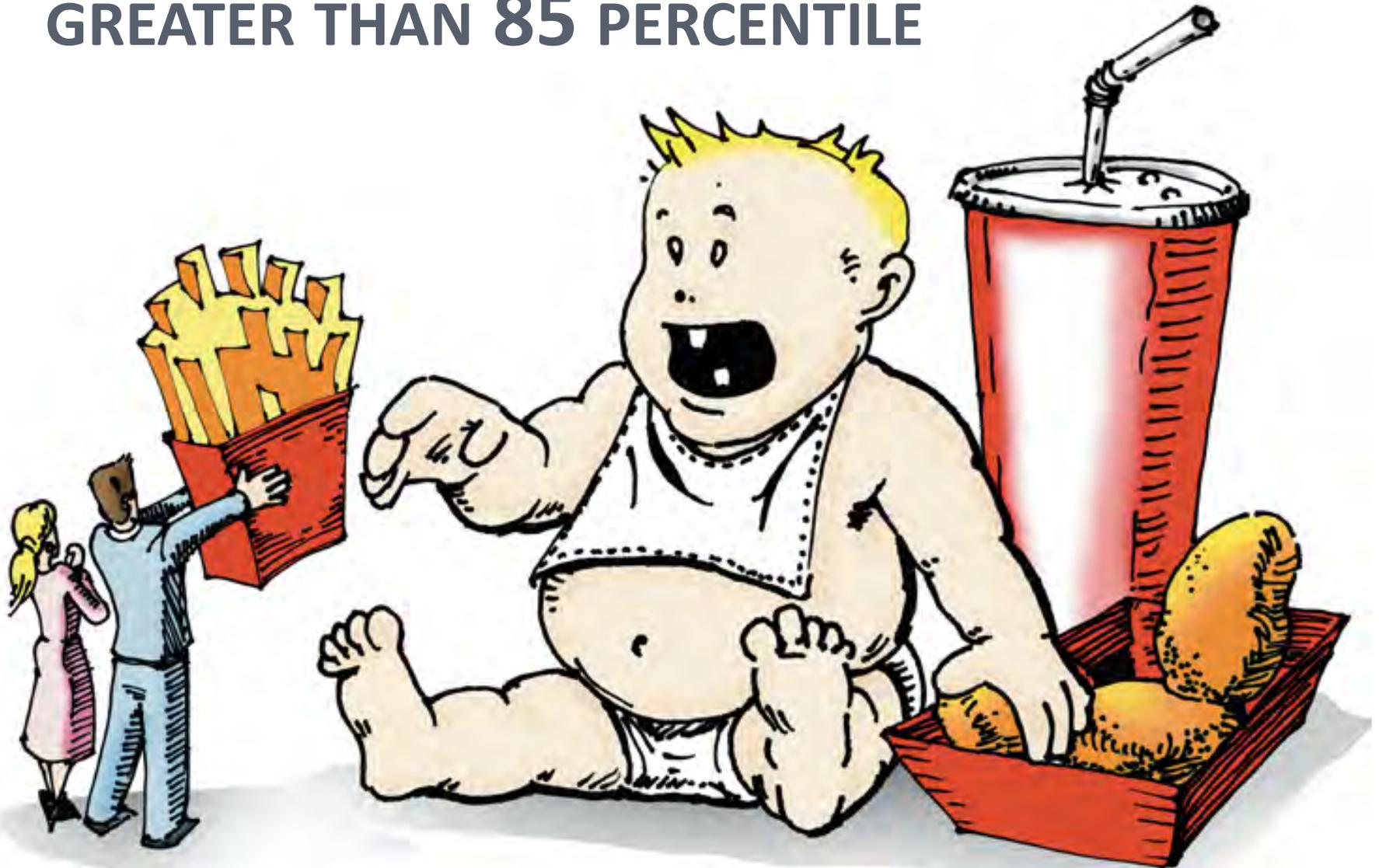


ASTHMA TRIGGERS IN WOMS GROUP

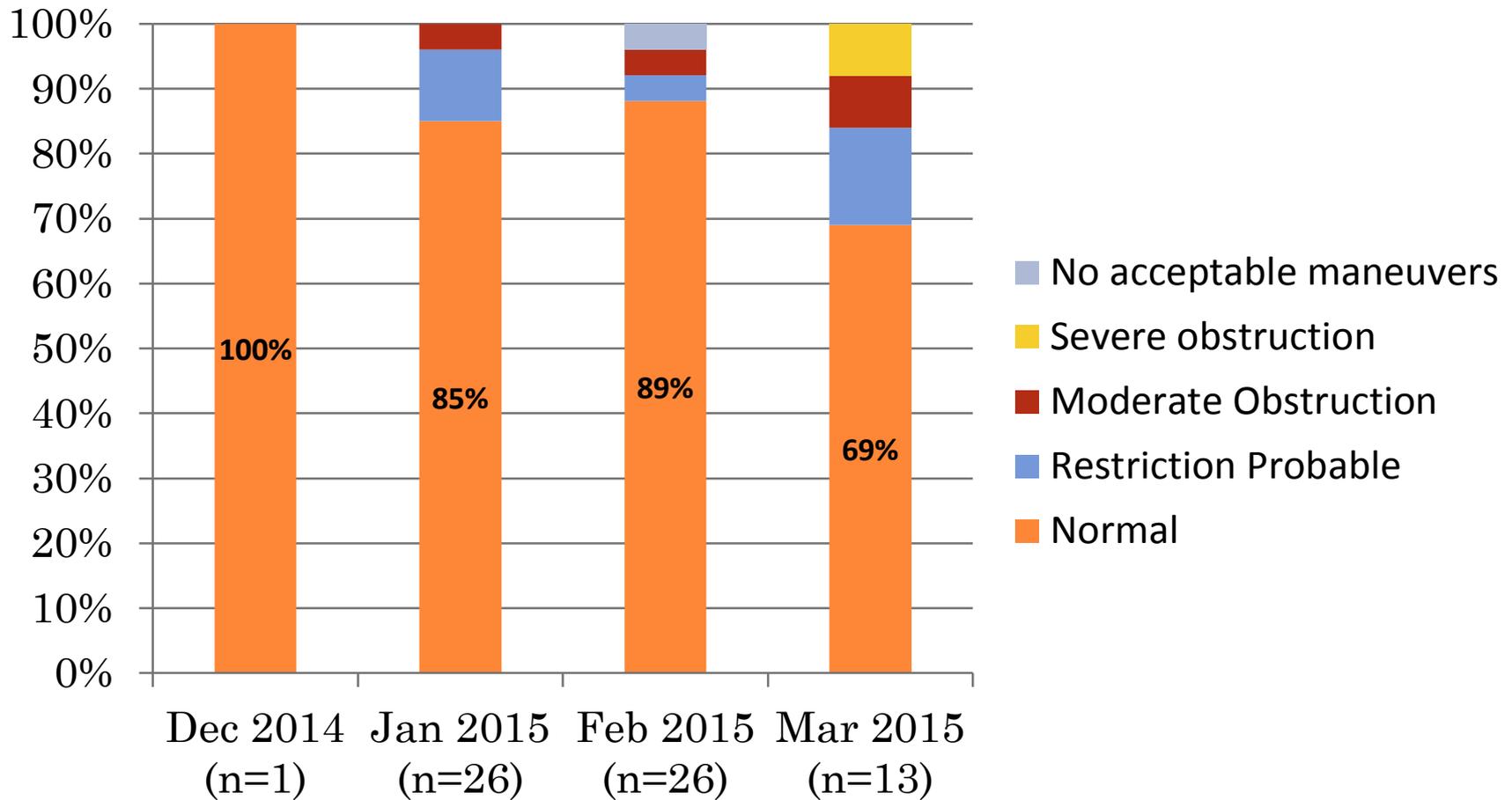
N = 41 Age Range: 11-14 years (mean age 12.2 years)



75.6% OF PARTICIPANTS HAVE BMI
GREATER THAN 85 PERCENTILE



SPIROMETRY RESULTS: WINTER SEASON



NO differences found:

- In ACT scores between Normal and Abnormal Spirometry findings
- Between past medical history/risk factors AND spirometry results (Normal vs. Abnormal)



ESTIMATED COST

Equipment

- Hand held devices range from \$500-\$2000
- Nose clips \$15 (box of 25)
- Spirettes Mouthpieces \$90 (box of 50)

Cost Saving

- Reusing mouthpieces and nose clips for retesting of same student at later date



BILLING AND CODING

CPT codes

Spirometry	No albuterol treatment (90410)
	Treatment w/ repeat spirometry (90460)
Pulse oximetry	(94760)

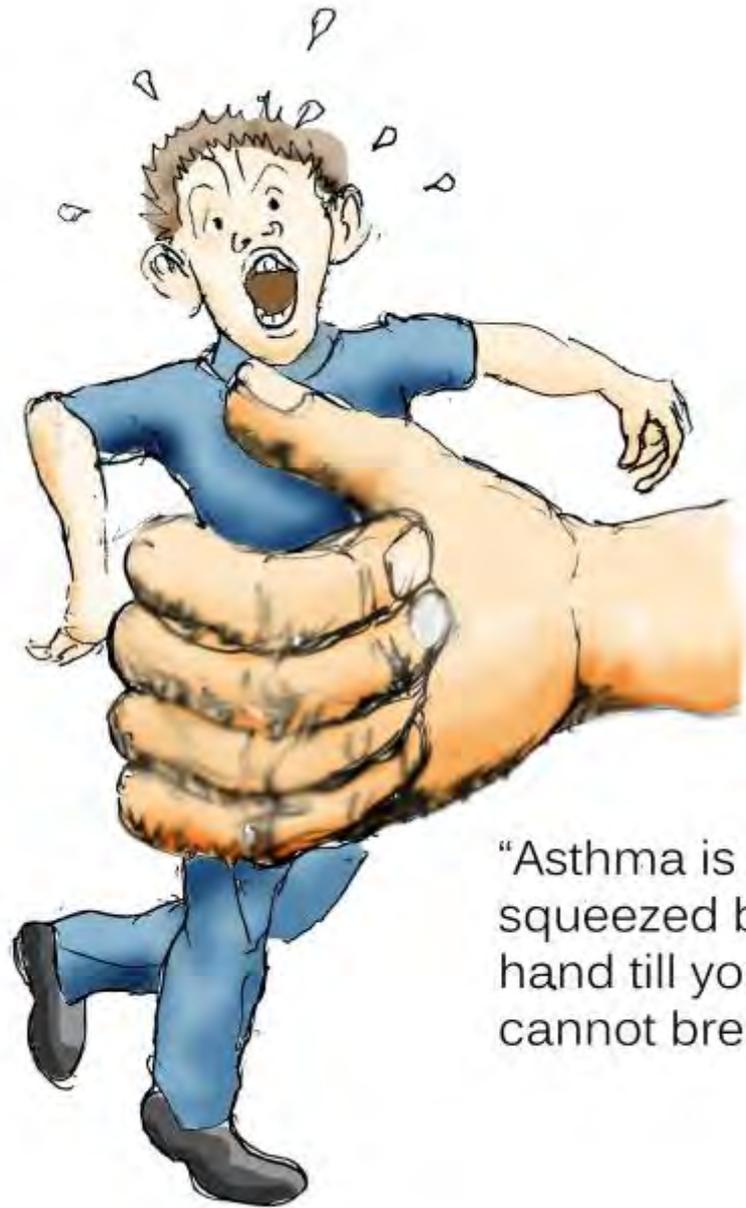
Visit Codes Moderate Level (99204/99214)

<u>Diagnosis</u>	<u>ICD-9 CODE</u>	<u>ICD-10 CODE</u>
Asthma	493.00	J45.901
Wheeze	786.07	R06.20
Dyspnea	786.09	R06.02



LIMITATIONS

- Fatigue
- Failure rate
- Convenience sample
- Lack of medical records
- Poor historians
- No baseline spirometry testing
- Software/EasyOne challenges



“Asthma is like being squeezed by a giant hand till you cannot breathe!”

A LOOK AHEAD TO 2015-2016 SCHOOL YEAR

- Asthma Learning Collaborative (ALC) Participant
 - Regional Asthma Management & Prevention (RAMP) EPA Grant Implementation
 - WOMS chosen as pilot learning collaborative SBHC
- Partner with PNP from San Francisco General Hospital Asthma Clinic
- Expansion of WOMS clinic services to Kipp Charter Middle School
- Expansion of Comprehensive Asthma Program to Lifelong's SBHC at Elmhurst Community Prep/Alliance Academy Middle School in East Oakland, CA



ACKNOWLEDGMENTS

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The
A T L A N T I C
Philanthropies

