



# **Asthma in School**

## **Asthma in Schools Presentation Overview**

- The problem of asthma among school-age youth
- Impact on learning
- Goals for school-based asthma management
- What can and should schools be doing
- Effects of care coordination between schools, hospitals, and the child's home environment

# Asthma is a Major Health Problem in the U.S. Schools

- 5 million school-aged children have asthma<sup>1</sup>
- Students miss almost 13 million school days each year due to asthma<sup>2</sup>
- On average students with asthma miss 8 school days per year<sup>4</sup>
- Asthma is the 3rd-ranking cause of hospitalization among children under 15<sup>3</sup>

**1** Epidemiology and Statistics Unit. Trends in Asthma Morbidity and Mortality. NYC: ALA, July 2006.

**2** CDC. Asthma Prevalence, Health Care Use and Mortality, 2003-2005. National Center for Health Statistics. Washington, DC.

**3** Hall MJ & DeFrances CJ. 2001 National Hospital Discharge Survey. Advance data from Vital and Health Statistics, Table 3; no 332. Hyattsville, MD: NCHS,2003.

**4** Asthma and Allergy Foundation (1992 and 1998 Study, 2000 Update). The Costs of Asthma

## **Asthma is a Major Health Problem in the U.S. Schools**

- Asthma accounts for \$3.2 billion/year
- Leading cause of school absence from a chronic condition
- 4.2 million asthma attacks/year



## How Does Asthma that is not Well-Controlled Impact Student Learning?

- Fatigue – students up at night with coughing, wheezing and other symptoms are tired in the morning
- Absenteeism related to asthma episodes, health care appointments, and hospitalizations
- Missed class time due to frequent school health office visits
- Children with asthma may be at risk for decreased school functioning due to acute exacerbations, increased absenteeism, iatrogenic effects of their asthma medication, and the stress associated with a chronic illness. <sup>1</sup>

## Asthma Goals For School Health

- Healthy school environment
- Health services in school
- Asthma education
- Supportive policies
- Coordinated Care between parents, schools, and providers

## Goal 1: Healthy School Environment

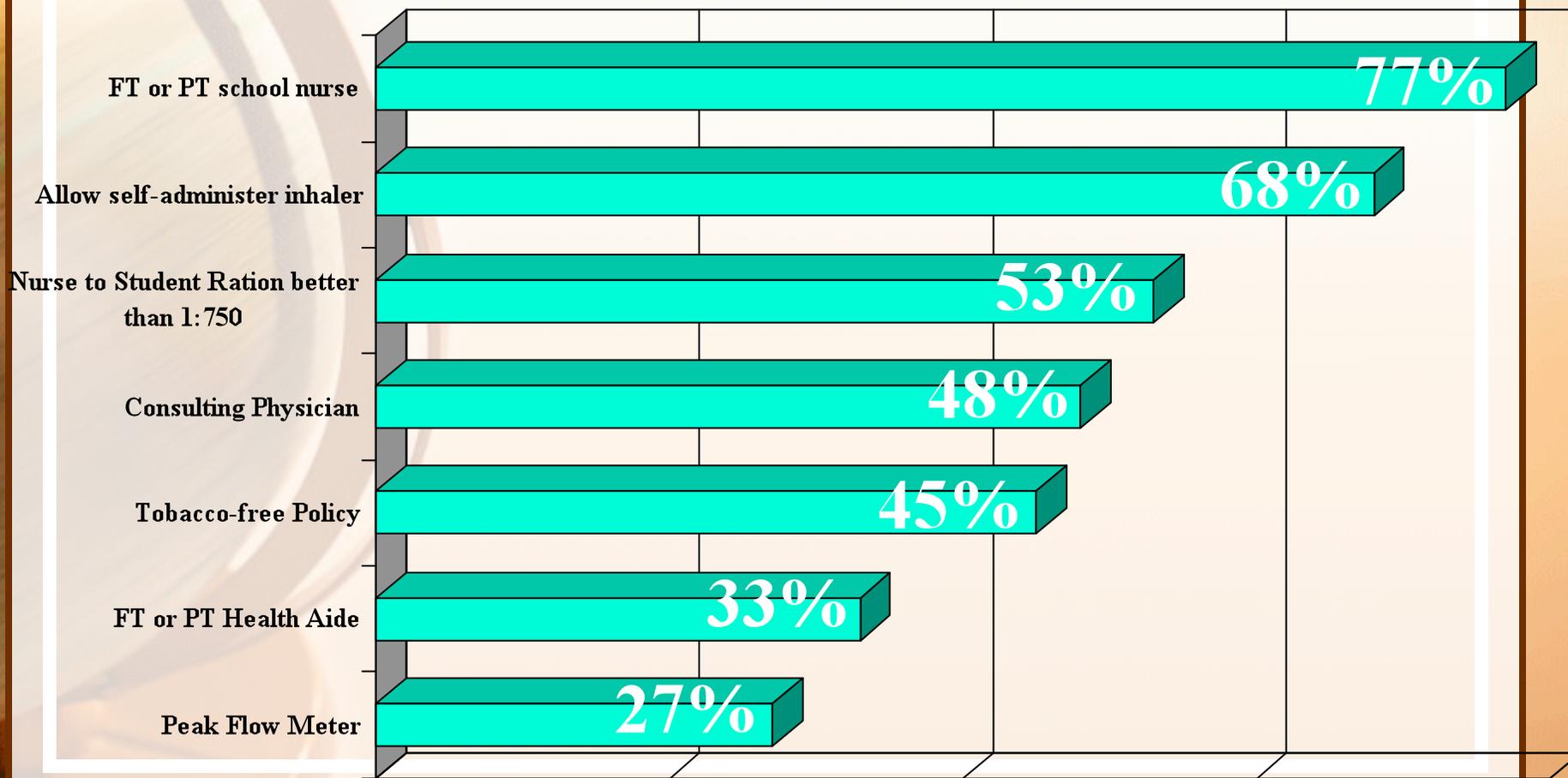
- Enforce no-smoking policies
- Reduce exposures to triggers: tobacco smoke, chemical vapors, furry or feathered animals, mites, cockroaches, chalk dust, mold
- Keep temperature and humidity at appropriate settings
- Maintain HVAC systems
- Dry wet areas promptly

## Goal 2: Health Services in School

- Provide full-time nursing services
- Include nursing assessments, care plans in student records
- Teach and monitor correct inhaler techniques, peak flow meter use
- Train, supervise and delegate to health assistants and education staff, as appropriate

Schools are an important part of a child's environment, yet many schools are inadequately prepared for children with asthma.♪

## Percentage of Schools that have:



Centers for Disease Control and Prevention. School health policies and programs study (SHPPS) 2000: a summary report. *J Sch Health*, 71 (7):249-350.

## Goal 3: Asthma Education

- Provide asthma awareness for all students
- Teach asthma management to students with asthma
- Provide asthma education for faculty and staff
- Teach parents how to manage asthma

## Goal 4: Supportive Policies

- Identify students with asthma
- Provide quick, reliable access to medications
- Establish individualized student asthma management plan
- Establish individualized student emergency plan for asthma episodes
- Promote safe and full participation in all school activities
- Monitor students' asthma

## Goal 4: Supportive Policies

### **Identify Students**

- Review student health records
- Interview parents
- Interview school health staff

# Supportive Policies

## **Provide Access to Medication**

- Ensure reliable access to medication for all school activities
- Allow self-administration as appropriate
- Provide for nebulizer treatment as needed

# Supportive Policies

## Establish Student Asthma Management Plan

- Address triggers
- Record personal best peak flow
- Specify routine medications
- Outline signs and symptoms of worsening asthma
- Specify medications required for emergencies and how to monitor response to them.
- Indicate emergency contacts
- Place plan in student's health record
  - Make copies for off-campus activities

# Supportive Policies

## **Establish Plan for Asthma Episodes**

- Develop school wide emergency plans/procedures
  - Include respiratory distress treatment protocols
  - Include plan for someone without an individualized plan
- Include an emergency plan for asthma episodes in the individualized student asthma management plan.

# Central Texas Asthma Action Plan



The colors of a traffic light will help you use your asthma medicines.

**Green = Go Zone!**  
Use preventive medicine.

**Yellow = Caution Zone!**  
Add quick-relief medicine.

**Red = Danger Zone!**  
Get help from a doctor.

**PREDICTED NORMAL PEAK FLOW READING:**

\_\_\_\_\_ lpm

## CENTRAL TEXAS ASTHMA ACTION PLAN

To be completed by Physician Designee and signed by Physician

Date \_\_\_\_\_

Patient Name \_\_\_\_\_

Date of Birth \_\_\_\_\_

Has the patient ever been admitted to ICU? ( ) Yes ( ) No

Grade in School \_\_\_\_\_

Has the patient ever required mechanical ventilation? ( ) Yes ( ) No

**Please classify this patient's asthma.** Refer to these choices adopted from the NIH Asthma Management Guidelines.

Asthma Classification by Physician: ( ) Mild intermittent ( ) Moderate persistent ( ) Mild persistent ( ) Severe persistent

Classification	Days with symptoms	Nights with symptoms	FEV1 or PEF (% pred. normal)
Severe persistent	Continual	Frequent	≤ 60%
Moderate persistent	Daily	≥ 5/month	> 60% to <80%
Mild persistent	> 2/week	3 to 4/month	≥ 80%
Mild intermittent	≤ 2/week	< 2/month	> 80%

### GREEN ZONE: No signs or PF 80-100% of Predicted Normal or Personal Best – Take Preventative Medication

PEAK FLOW FROM \_\_\_\_\_ TO \_\_\_\_\_

You have all of these



- Breathing is good
- No cough or wheeze
- Sleep through night
- Can work and play

1. What preventative medications are prescribed and how often are they given? Name and Dose: \_\_\_\_\_

2. Does this patient have Exercised Induced Asthma? ( ) Yes ( ) No If yes, what medication should be given for EIA?

Take only one of the treatments 15-20 minutes before physical activity as needed.

ALBUTEROL 2 puffs MDI & chamber  ALBUTEROL 1 vial in nebulizer

XOPENEX 2 puffs MDI & chamber  XOPENEX 1 vial in nebulizer

OTHER: \_\_\_\_\_

### YELLOW ZONE: Caution Signs or PF 50 – 79% of Predicted Normal or Personal Best – Continue Preventative Medication

PEAK FLOW FROM \_\_\_\_\_ TO \_\_\_\_\_

You have **any** of these:



- First signs of a cold
- Exposure to known trigger
- Coughing doesn't stop
- Mild wheeze
- Chest tightness

In case of an asthma exacerbation, what quick-relief medication should be used?

Take one treatment every 4-6 hours as needed for 24-48 hours.

Recheck peak flow 15 minutes after treatment

ALBUTEROL \_\_\_\_\_ puffs MDI & chamber  ALBUTEROL 1 vial in nebulizer

XOPENEX \_\_\_\_\_ puffs MDI & chamber  XOPENEX 1 vial in nebulizer

OTHER: \_\_\_\_\_

If treatments are needed for longer than 24-48 hours, call your doctor.

### RED ZONE: Danger Signs or PF Below 50% of Predicted Normal or Personal Best – Continue Preventative Medication

PEAK FLOW BELOW \_\_\_\_\_

Your asthma is getting worse fast:



- Medicine isn't helping
- Breathing is hard and fast
- Nose opens wide
- Ribs show during breathing
- Can't talk well.
- **Inhale & exhale wheeze**

1. In case of an asthma exacerbation, what quick-relief medication should be used?

Take one treatment every 20 minutes for up to three treatments only.

Recheck peak flow 15 minutes after treatment

ALBUTEROL \_\_\_\_\_ puffs MDI & chamber  ALBUTEROL 1 vial in nebulizer

XOPENEX \_\_\_\_\_ puffs MDI & chamber  XOPENEX 1 vial in nebulizer

OTHER: \_\_\_\_\_

2. Get immediate medical attention – Call your doctor. If at school, go to the nurse. Or, call 911.

Physician signature: \_\_\_\_\_ Physician name: \_\_\_\_\_ Telephone: (\_\_\_\_) \_\_\_\_\_ Date: \_\_\_\_\_

**For children in school:** School Name: \_\_\_\_\_ School district: \_\_\_\_\_

I, the above signed physician, certify that the above named student has asthma and is capable of carrying and self-administering the above quick-relief asthma medication. (Texas Inhaler Law.) ( ) Yes ( ) No

I give permission for the school nurse to administer the above physician orders and to communicate with my child's health care provider concerning my child's asthma.

Parent signature: \_\_\_\_\_ Parent name: \_\_\_\_\_ Telephone: (\_\_\_\_) \_\_\_\_\_ Date: \_\_\_\_\_

## Supportive Policies

### **Promote Participation in All Activities, including Physical Activities**

- Encourage student participation
- Allow pretreatment and or warm-up before physical activity
- Allow access to quick relief medication
- Modify activity or substitute with less strenuous option

## Supportive Policies

### **Monitor Students' Asthma**

- Watch for symptoms of uncontrolled asthma
- Monitor absenteeism due to asthma
- Refer for home teaching as needed

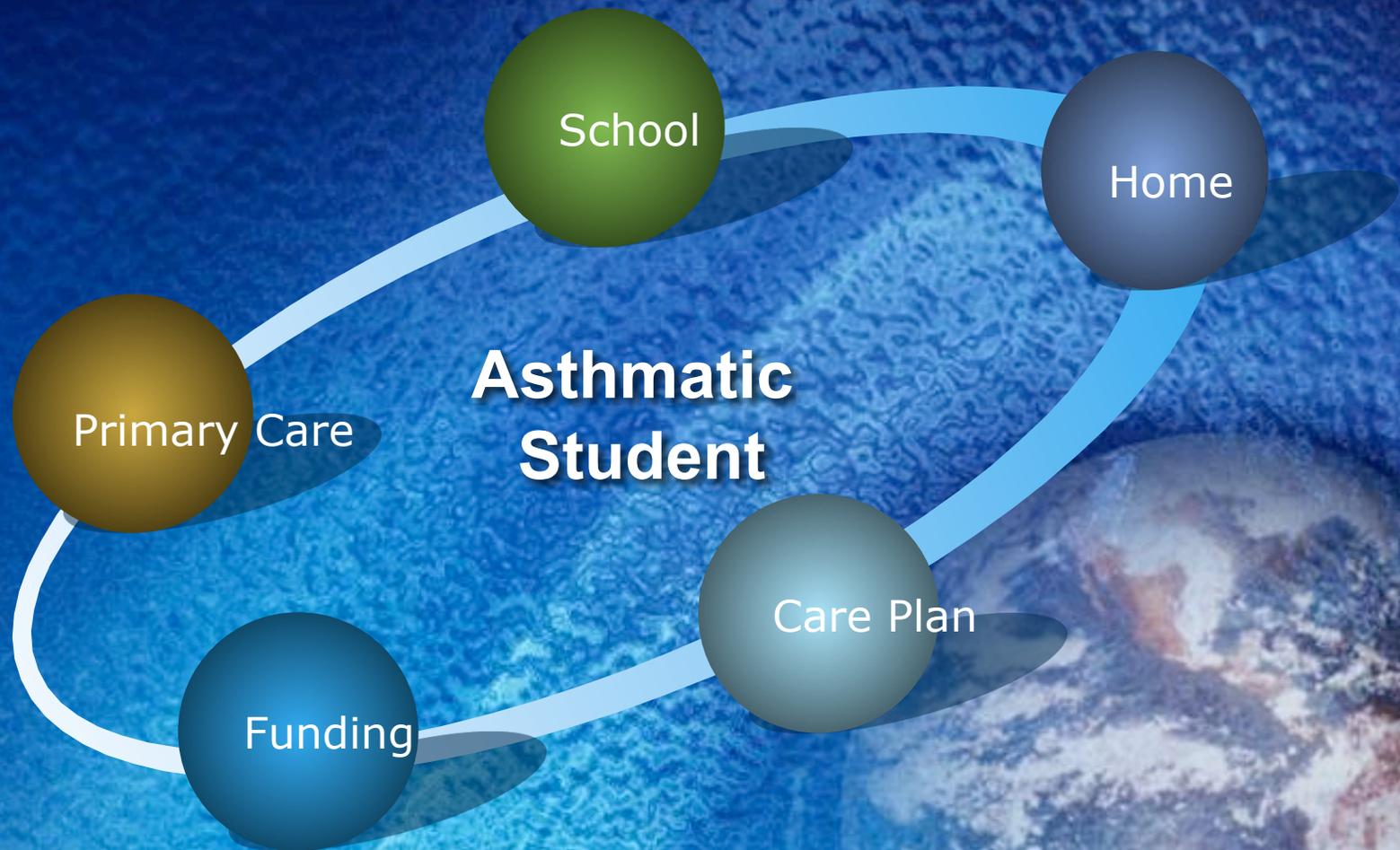
## Goal 5: Care Coordination

- Form linkages among school, home and health care providers
- Observe and report symptoms, medication use
- Review difficulties student may have with daily school management plan
- Resolve problems with school performance related to asthma
- Encourage active student participation in school activities

## Seton Asthma Center

- Asthma Education
- Home Visits
- Care Coordination
- Case Management/Follow-up
- Telephone support
- Care Planning

# Coordinating a Complex Universe





- **What is the System for Delivering High Quality Asthma Care?**

The *System for Delivering High-Quality Asthma Care* is a conceptual framework that identifies the core elements of successful asthma programs

- **How Can I Use the Change Package?**

The [Change Package](#) (Version 3) presents the change concepts and strategies that successful asthma programs have applied to incorporate the *System for Delivering High-Quality Asthma Care* into their programs.

- **How Current Is The Information?**

The *Communities in Action for Asthma-Friendly Environments* Network updates the Change Package as real-time learning and information exchange drive the ongoing improvement of asthma care.

## DELIVERING HIGH QUALITY ASTHMA CARE



# The System for Asthma Control

## Program Sustainability

### Building the System

- Identified a problem and an initial funding source (Children's Hospital of Austin)
  - Developed as a research project with a solid value proposition
  - In 2000, over 1,100 emergency department and over 300 inpatient visits for asthma
  - An estimated 30,000 asthmatic children in Central Texas

### Key Drivers of Program Effectiveness

- ✓ Leaders & Champions
- ✓ Community Ties
- ✓ Collaborations
- ✓ Integration of Health Care Services
- ✓ Tailored Environmental Interventions

### Resourcing the System

- Built a diverse portfolio of funding
  - Operations support from hospital and community health centers
  - Grants and contracts
  - Philanthropy
- This job is never done...continually build relationships with funders

### Getting Results – Evaluating the System

- **Health Outcome Goals**
  - Reduce unscheduled visits for asthma care
- **Measures & Methods**
  - Comprehensive initial evaluation of intervention
  - Ongoing surveillance and case management
- **Process Outcomes**
  - Deliver more care every year

# Building the System

- Designed a novel intervention to address the problem
  - Focus on ED recidivism
  - Recidivism in 2004 was 27%
  - Goal to reduce recidivism to under 15%
  - Focused on ED and IP visits with target home-based interventions

# Building the System

- Recruited and trained dedicated staff
- Made a commitment to being data driven
  - Motivated Respiratory Care Practitioners
  - 7 FTE
  - Setup electronic systems for patient identification early in the process
  - Setup systems for data capture and evaluation
  - Programs are data-driven
  - Set aggressive but attainable goals
  - Follow the scientific method

# Key Drivers of Program Effectiveness

## ✓ Strong Community Ties

- Built and validated model at the Children's Hospital, then implemented and sustained it in the community
  - Started with a hospital-based asthma education program
  - Expanded to community centers with support from the local health department
  - Broadened approach to Community Health Centers and Local School districts
  - Now operate a home-visit based asthma case management and education program

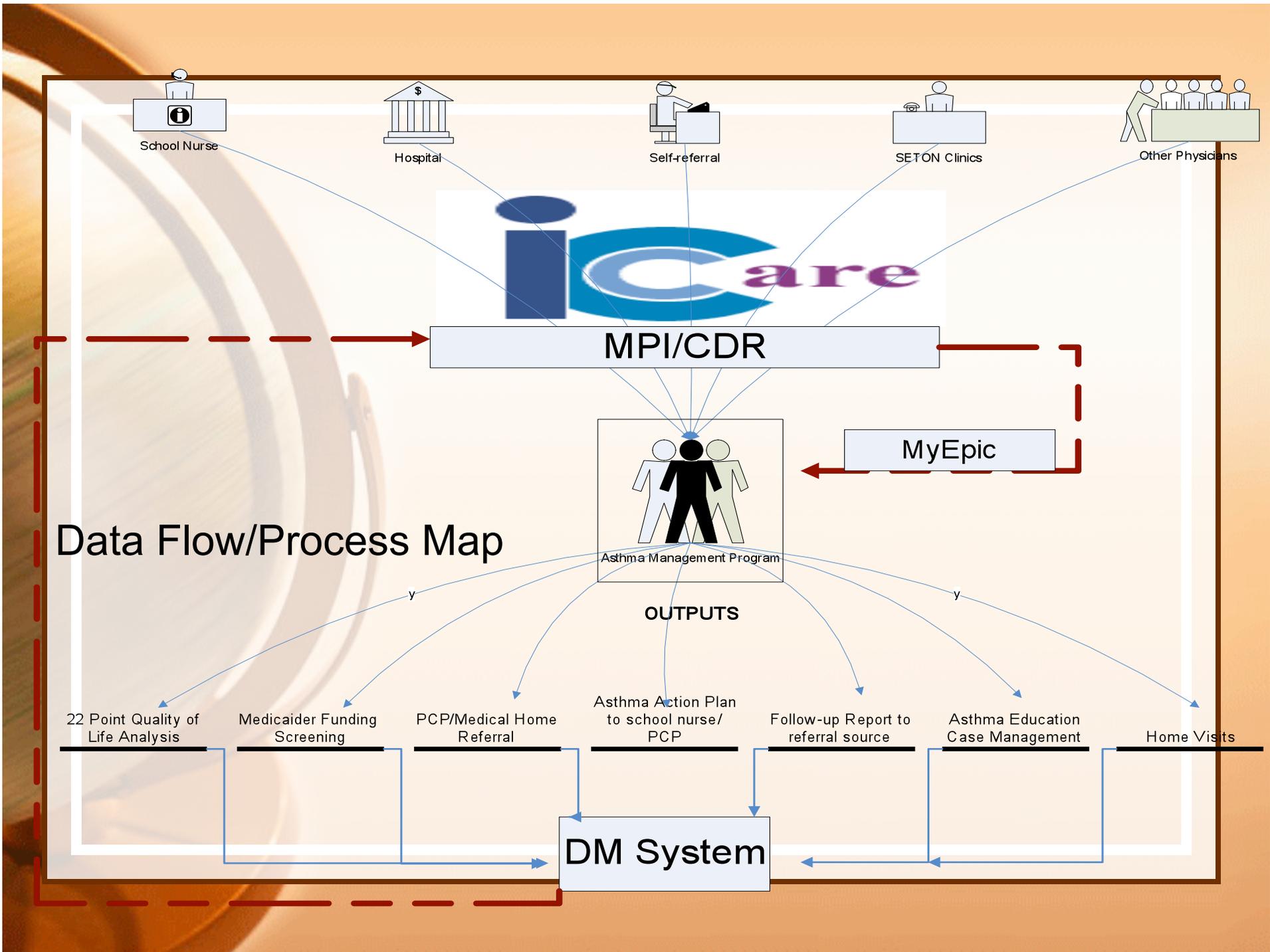
# Key Drivers of Program Effectiveness

## ✓ High-Performing Collaborations

- Central Texas Asthma Coalition
- American Lung Association of the Central States
- Integrated Care Collaboration
  - Data collected from over 60 locations:
    - 16 Hospitals
    - 45 Clinics
    - MHMR residential, group facilities
  - Over 750,000 patients
  - Over 5 million encounters
    - Data primarily from 2002 to date
    - Data include ICD-9 Diagnosis, CPT-4 Procedure, Patient Demographics, Provider Name/Location, Encounter type
    - Encounter types include ED, Inpatient, Clinic, Dental, Non-Medical
  - Over 750,000 prescriptions

## Program Design

- Identification of students treated for asthma
- Screening for funding eligibility for uninsured students
- Coordination of transition of care to primary physician
- Facilitation of access to pharmaceuticals
- Asthma Action Plans faxed directly to school nurses



# Getting Results – Evaluating the System

- Health Outcome Goals and Results
- Measures & Methods
- Process Outcomes

# Getting Results – Evaluating the System

- Health Outcome Goals and Results
  - Decrease in hospital utilization
  - Improvement in Quality of Life
  - Improvement in spirometry
  - Decrease in daytime and nighttime symptoms
  - Increase in physical activity
  - Decrease in school/work absence
  - Decrease in rescue medication usage
  - Improved compliance with controller medication
  - Improved self-management of asthma

# Getting Results – Evaluating the System

- Measures & Methods
  - Comprehensive initial evaluation of intervention
    - 6 question pre/post knowledge assessment
    - 22 question, validated quality of life survey
    - 50 question, EPA-developed home environment assessment
    - 6 question patient satisfaction survey
  - Ongoing surveillance and case management
    - 90-day telephone follow-up, repeat QOL survey for 12 months
    - Evaluate funding, physician access, pharmacy access every 90 days
    - Intervene as needed

# Getting Results – Evaluating the System

- Process measures

Process Measures
# Patients categorized by classification of CHF
Patients completing Quality of Life (QoL) surveys
Patients with written home management care plan
Patients who complete follow-up surveys
# of home-based visits scheduled and completed
# follow-up calls completed
# patients completing daily TTR requests
Patients receiving home management education
Patient satisfaction with program

# Getting Results – Evaluating the System

- Outcome measures

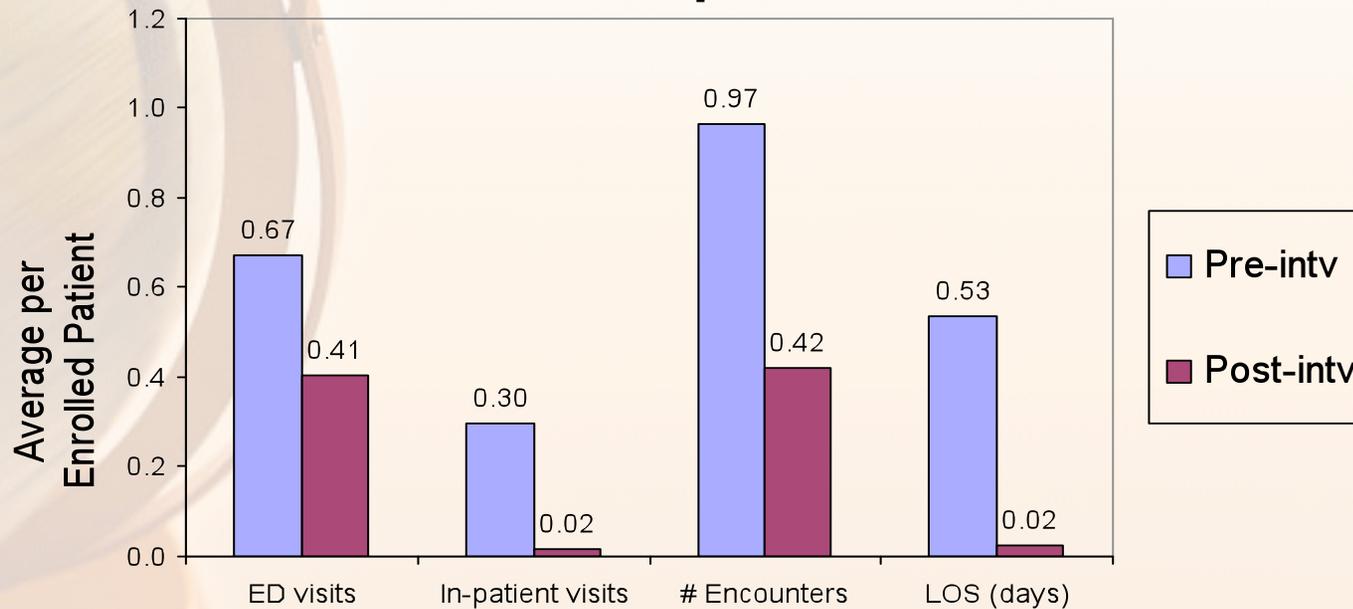
Outcome Measures
Emergency Department (ED) visits per patient
In-Patient (IP) visits per patient
Average length of stay per patient
Clinic visits per patient
30-day readmissions rate
60-day readmission rate
Program ROI

## Recent retrospective study of program cohort

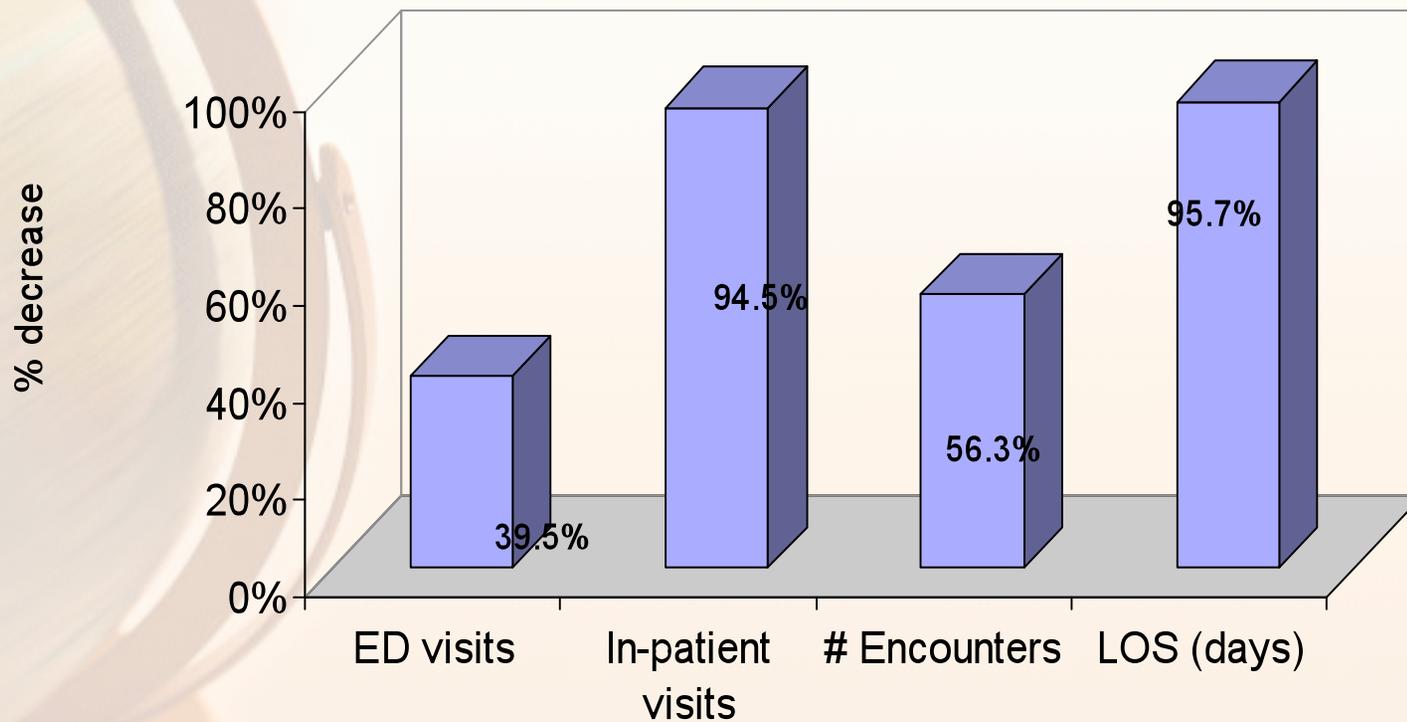
- 175 children aged 5 – 15
- Identified following ED visit or hospitalization
- Contacted and offered home-based education and care management at no cost to the child
- Health Care utilization monitored for 12 months
- Action Plans provided to school nurses

# Average acute care utilization within intervention group

## Percentage decrease in utilization by enrolled patients

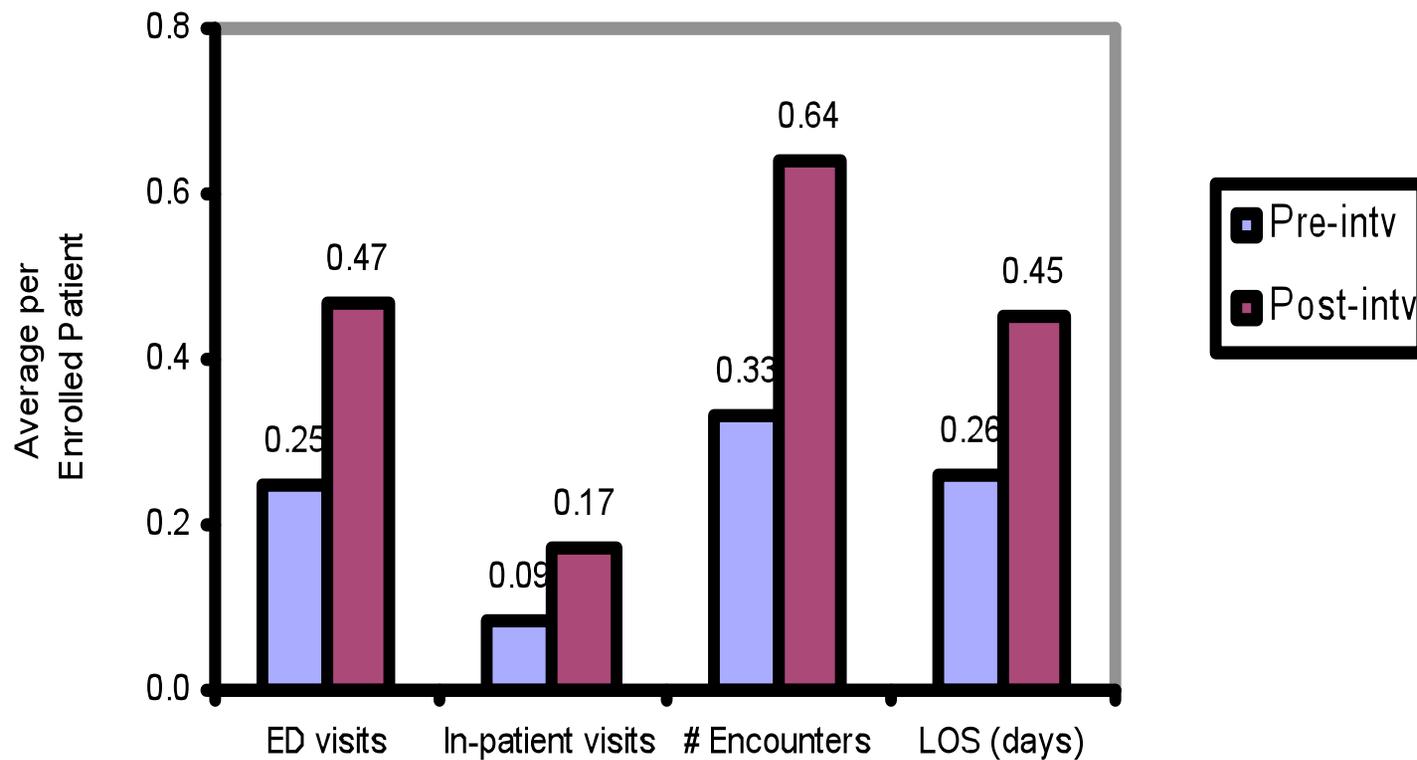


# Percentage decrease in utilization

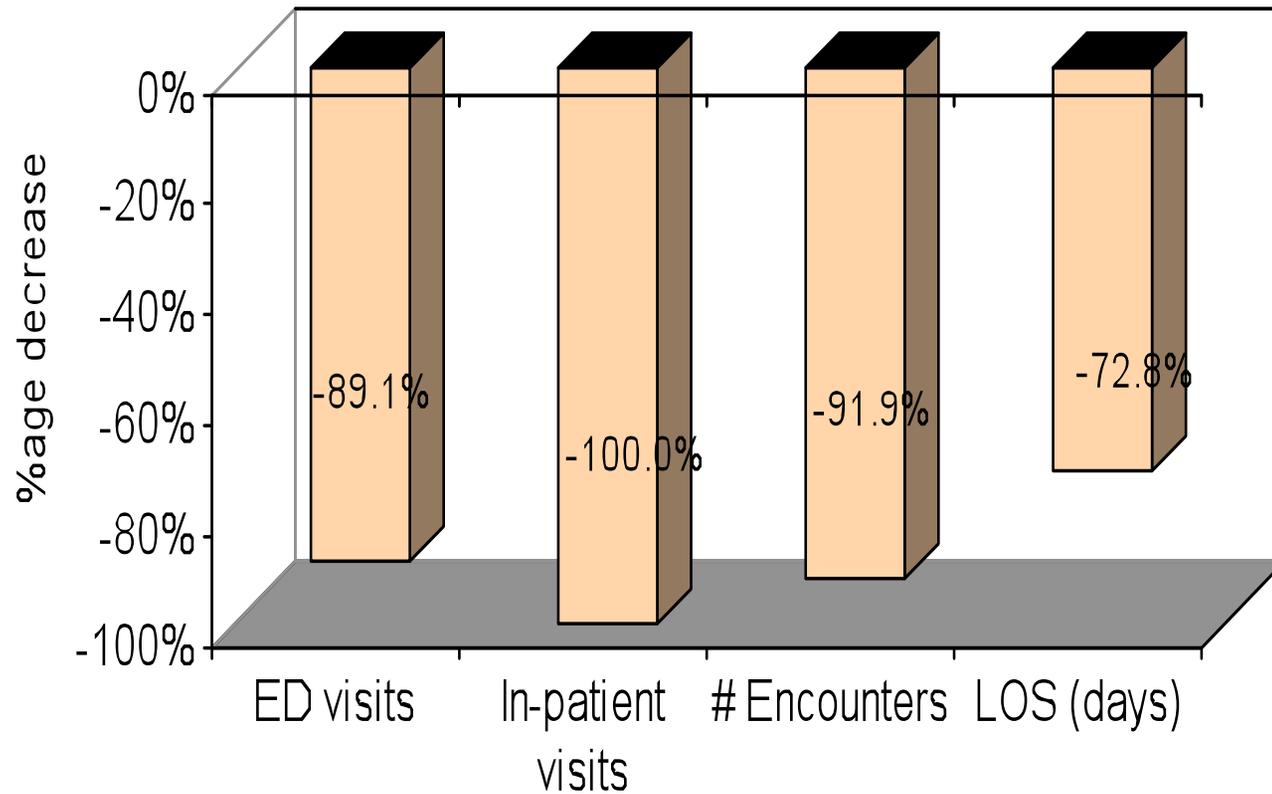


# Average utilization by control group

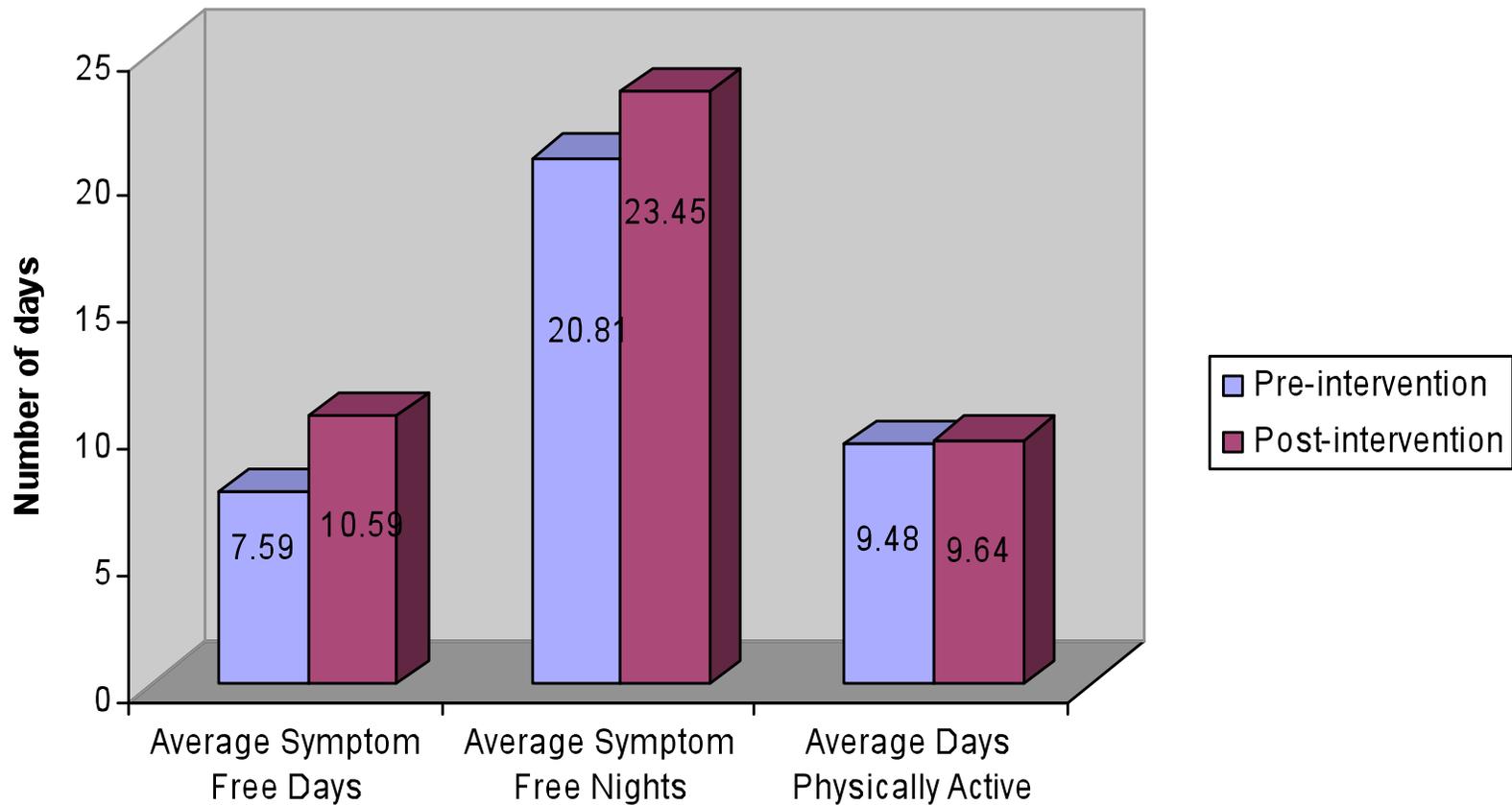
Randomly selected control from ICare System  $n=2,000$



# Percentage decrease in average utilization by control group



# Quality of Life Survey Results



## Asthma Action Plan Coordination

