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\(^1\)
- Students miss almost 13 million school days each year due to asthma\(^2\)
- On average students with asthma miss 8 school days per year\(^4\)
- Asthma is the 3rd-ranking cause of hospitalization among children under 15\(^3\)

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.  

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:

- FT or PT school nurse: 77%
- Allow self-administer inhaler: 68%
- Nurse to Student Ratio better than 1:750: 53%
- Consulting Physician: 48%
- Tobacco-free Policy: 45%
- FT or PT Health Aide: 33%
- Peak Flow Meter: 27%

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 Polices

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

To be completed by Physician Detective and signed by Physician: _____________________ Date: __________________

Patient Name: _____________________ Date of Birth: _____________________

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

Please classify this patient’s asthma. Refer to these clinical criteria adopted from the NIH Asthma Management Guidelines.

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

Classification Days with symptoms Nights with symptoms FEV1 or PEF (% pred. normal)
Severe persistent Continuous Frequent ≤ 60%
Moderate persistent Daily ≤ 1month > 60% to <80%
Mild persistent ≤ 2/week 3 to 4/week > 80%
Mild intermittent < 2/week ≤ 1/week

GREEN ZONE: No signs or PE 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 whooze
• 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 Exercise-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
   - XOPENEX 2 puffs MDI & chamber
   - XOPENEX 1 vial in nebulizer
   - OTHER: _____________________

YELLOW ZONE: Caution Signs or PE 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
• Mid 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: 2 puffs MDI & chamber
   - XOPENEX: 2 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 PE 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
• Noisy, open word
• Ríb 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: 2 puffs MDI & chamber
   - XOPENEX: 2 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: _____________________

*Used on 2002 NIH/NHLBI Guidelines for the Diagnosis and Management of Asthma
Rev: 8/17/2007*
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

Primary Care

School

Home

Funding

Care Plan

Asthmatic Student
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.
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
Data Flow/Process Map

MPI/CDR

MyEpic

DM System

Asthma Management Program

22 Point Quality of Life Analysis
Medicaid Funding Screening
PCP/Medical Home Referral
Asthma Action Plan to school nurse/PCP
Follow-up Report to referral source
Asthma Education Case Management
Home Visits
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

<table>
<thead>
<tr>
<th>Process Measures</th>
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<tbody>
<tr>
<td># Patients categorized by classification of CHF</td>
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<tr>
<td>Patients completing Quality of Life (QoL) surveys</td>
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<tr>
<td>Patients with written home management care plan</td>
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<tr>
<td>Patients who complete follow-up surveys</td>
</tr>
<tr>
<td># of home-based visits scheduled and completed</td>
</tr>
<tr>
<td># follow-up calls completed</td>
</tr>
<tr>
<td># patients completing daily TTR requests</td>
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<tr>
<td>Patients receiving home management education</td>
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<td>Patient satisfaction with program</td>
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### Getting Results – Evaluating the System

- **Outcome measures**

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<thead>
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<tr>
<td>Emergency Department (ED) visits per patient</td>
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<tr>
<td>In-Patient (IP) visits per patient</td>
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<tr>
<td>Average length of stay per patient</td>
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<tr>
<td>Clinic visits per patient</td>
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<tr>
<td>30-day readmissions rate</td>
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<tr>
<td>60-day readmission rate</td>
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<tr>
<td>Program ROI</td>
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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

- ED visits: 39.5%
- In-patient visits: 94.5%
- # Encounters: 56.3%
- LOS (days): 95.7%
Average utilization by control group
Randomly selected control from ICare System $n=2,000$
Percentage decrease in average utilization by control group

- ED visits: -89.1%
- In-patient visits: -100.0%
- # Encounters: -91.9%
- LOS (days): -72.8%
Quality of Life Survey Results

- Average Symptom Free Days: Pre-intervention 7.59, Post-intervention 10.59
- Average Symptom Free Nights: Pre-intervention 20.81, Post-intervention 23.45
- Average Days Physically Active: Pre-intervention 9.48, Post-intervention 9.64