Implementation of an Asthma Program in South Texas Elementary Schools

2009 - 2010

Environmental Public Health Leadership Institute Fellow:

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EXECUTIVE SUMMARY:

Asthma is a widespread public health problem that has increased in the past two decades in the United States and Texas. Data from the 2007 Texas Behavioral Risk Factor Surveillance System indicate that there were 876,000 (13.6%) children (0-17 years of age) with reported lifetime asthma and 586,000 (9.1%) children with reported current asthma. They experience 14.5 million missed school days, accompanied by close to $2 billion in annual medical costs. This project proposes a comprehensive approach through the collaboration of numerous institutions to implement an asthma educational program in schools located in Hidalgo County, Texas. The cooperating organizations range from academia to local government agencies and community-based organizations. The purpose of this program is to: a) develop a more holistic approach to asthma control including education about related environmental triggers for students with asthma, their parents, school nurses and staff of all targeted schools; b) teach students with asthma case management, and c) monthly follow up for 5 months.

The education program is currently underway in four school districts at Hidalgo County, Texas. Since it began in June 2009, the project has trained 224 health professionals and public health workers, 30 promotoras, and several Parent Teachers Organizations in five elementary targeted schools. One hundred and fifty students with asthma from participating elementary schools have been trained to not only recognize asthma environmental triggers, but also, to know what to do at the onset of an asthma attack. This project has been working on a monthly basis with over 10 community partners to educate and participate in research. The program is underway and all 150 elementary and middle school students will have monthly follow up asking them about missed school days, visits to emergency room, and to physicians. There are plans to expand the study in other schools in Hidalgo County next year due to a contract obtain through the Texas Asthma Control Program funded by the Centers from Disease Control.

INTRODUCTION/BACKGROUND:

Annually, asthma is responsible for nearly 25,000 hospitalizations in Texas, totaling more than $446 million in hospital charges. Asthma places a huge burden on affected children and their families. It limits a child’s ability to play, learn, and sleep, and necessitates potentially complex and expensive interventions. Children spend one third of the day at school, where policies and the environment play a large role in their health. In 2002, the National Heart, Lung, and Blood Institute (NHLBI) sponsored the National Asthma Education and Prevention Program (NAEPP), which encourages “schools [to] adopt policies for the management of asthma that ensure student safety, encourage the active participation of students in the self-management of their condition and allow for the most consistent, active participation in all school activities”.

The implementation of the asthma program was in Hidalgo County. The population of Hidalgo County is largely urban, Hispanic, burdened by a high poverty rate, and rapidly growing due to immigration. In 2005, the county population was 678,275, an increase of 19.1% from the 2000 census. Of this number, 93% were urban, 7% rural, and nearly 90% Hispanic. In addition, residents living in poverty comprised 41% of the total population.
The progress of border cities in lowering asthma attacks is hindered by the close proximity of resident’s homes to polluted areas, as well as a lack of health insurance and proper asthma management. The McAllen-Edinburg metropolitan area reported 3,028 asthma-related hospital admissions during July 1999-2003, a rate of 14.0 per 10,000 individuals. The population is growing, therefore, we anticipate an increase in vehicular traffic, outdoor pollutants, and the use of pesticides inside and outside the home which will increase the number and severity of asthma cases. Childhood asthma rates are highest among minorities, families with low-educational levels, and among those who reside in low-income communities. The most common difficulties to adequate asthma care among low-income families include social, economic, literacy, and linguistic barriers. Poorly controlled asthma in children contributes to frequent emergency department visits, hospital admissions, school absences, and missed parents work days, all of which create significant personal and financial burden for families.

Air pollution ranks among the worst environmental problem in the border region of Texas, where particulate matter levels regularly fail to meet quality standards. Several studies have suggested that asthma and other respiratory problems may be elevated in the South Texas region due to air pollution.

Problem Statement:

Texas School Districts need to implement an asthma education program to insure that teachers, staff, students and parents are trained on how to recognize and prevent environmental asthma triggers as well as to learn self-management of asthma. Why is there a lack of asthma training for students, school nurses and personnel?

Behavior Over Time Graph:

Figure 1 depicts the variables that contribute to the continuing problem of children with asthma at school. Implementation of an asthma education to students, parents, teachers, staff, will improve the knowledge of environmental asthma triggers. Furthermore, the number of children will not change, but frequency of attacks, severity, missed school and ER visits will probably change due to knowledge acquired based on the education received.
Figure 1: Behavior Over Time Graph

GOAL: Children with controlled asthma

- Asthma training
- Missing school days
- Decrease of visits to physician and ER

2009

Now: Children with asthma

0 days

95%

20%

2010
Causal Loop Diagrams and applicable archetypes:

Figure 2: Causal Loop Diagram – Shifting the Burden

**Shifting the Burden**

Follow up of students with asthma

Independent Health Asthma Plan (IHAP)

Students with no controlled asthma

Asthma training

Data on incidence

Policy and resources

Goal: Controlled Asthma

Things are OK if a student has an IHAP

*Nurse workload*  
*Parent training*

*Increase missed schools days*

*Increase ER visits*  
*Increase MD visits*

We need to address environmental air quality in school, not just asthma case management

We need to address environmental air quality in school, not just asthma case management
Causal Loop Diagrams and applicable archetypes:

Figure 2 is an archetype that applies to this project - Shifting the Burden. The goal of the program is to control asthma at schools. The problem is children with no controlled asthma at school. The short-term fix is to ask for Independent Asthma Health Plans. This shifts the burden away from the ideal which is providing asthma education to students, parents, school nurses and staff to learn environmental asthma triggers using a proactive approach. Several scenarios can occur. First, there is an increase number in ER visits and MD visits due to asthma attacks. Second, there is an increase in the number of missed school days. Third, there is a lack of data on incidence of students with asthma in schools since this chronic disease is not mandated to be reported. One of the most important issues is that school nurses are overloaded with their school tasks; therefore, it is important to look for mechanisms to help them implement those asthma education programs.

10 Essential Environmental Health Services:

This project addresses ten Environmental Public Health Essential Services as identified by the CDC’s Environmental Health Services Branch:

![Diagram of the 10 Essential Environmental Services]

Figure 3: Ten Essential Environmental Services as outlined by Carl S. Osaki, University of Washington School of Public Health and Community Medicine, Seattle, WA
1. Monitor - It is important to monitor asthma students to identify important community environmental health problems. An asthma education program would provide a mechanism for preventing asthma attacks through identification of asthma triggers and good management of the asthma medication.

2. Diagnose and Investigate – Texas school districts should utilize their position to enhance awareness of asthma education in schools through expansion of surveillance programs, evaluation, data sharing and commitment.

3. Inform, Educate and Empower – It is important to provide necessary resources needed to educate, inform and empower healthcare providers and care givers to learn about asthma environmental triggers, management of asthma to have good quality of life.

4. Mobilize Community and Partners – Encourage family and community involvement at all levels through integration of asthma education on a continuous basis in the school environment.

5. Develop Policies and Plans – Develop and implement an effective referral system and asthma education program that promotes and provides guidance and counseling through encouragement and involvement.

7. Link to provide care – Provide links to healthcare providers, schools and caregivers to that offer guidance, information and assistance in asthma related issues through effective programs.

9. Evaluate – Survey schools participating in asthma education on annual basis on effectiveness of success of programs as well as asthma control on those students who have taken asthma training.


**National Goals Supported**

1. This project supports one of the core Environmental Health objectives of Healthy People 2010 in finding solutions through integration of the ten Environmental Health Services by providing guidelines to develop public health strategies in the abatement of childhood and adolescent obesity confronting schools.

This project also supports Healthy People in Healthy Places through schools that protect and promote the health, safety and development of all students, and to protect and promote asthma education and management.

2. This project supports the following goals and objectives in the CDC’s National Strategy to Revitalize Environmental Public Health Services.

**Goal I: Build Capacity** – Strengthen and support environmental public health services at state, tribal, territorial and local levels. The asthma training has been implemented in the targeted schools as well as nursing students from the University of Texas Pan American and respiratory therapist students from the South Texas College. Public health nurses at Hidalgo County Health Department have been also trained. All of them received the Asthma 101 and Open Airways training from the American Lung Association.
**Goal II: Research Support** – Support research to define the effective approaches to enhance environmental public health services. One grant from the Environmental Border 2012 was awarded to develop this asthma study to three independent school districts. A contract has been obtained from Texas Asthma Control Program, Department of State Health Services to support also the asthma education of students, parents and health professionals.

**Goal III: Foster Leadership** – Foster leadership to enhance environmental public health service. Since its beginning the asthma program involved three ISD’s administration to buy into the program. It has been very difficult to work with schools due to time constrains and overwork of school nurses and teachers. The McAllen Asthma Coalition was created to involve community partners, local health departments, academia and others. Part of the asthma program has been to identify the leaders, meeting with them, educating them about asthma and looking for possible options on how to involve more cooperation from schools.

**Goal IV: Communicate and Market:** Improve communication and information sharing among environmental public health agencies, communities, strategic partners and other stakeholders and better market environmental health services to policymakers and the public. Part of the asthma program is to provide Public Service Announcements to the community in Spanish and English. Another approach that will be developed is to create a theater script with asthma as a topic for high school students to deliver to other schools and Parent-Teacher Organizations. It is important to identify the leaders in those groups that will help the cause and will be advocates to implement asthma trainings in other schools.

**Goal VI: Create Strategic Partnerships** – Foster interactions among agencies, organizations and interests that influence environmental public health services. This asthma program has been working closely with the Texas Asthma Control Program (TACP), McAllen Asthma Coalition (MAC), US Environmental Protection Agency (USEPA), the Texas A&M Health Sciences Center, School of Rural Public Health (TAMHSC-SRPH), Hidalgo County Health & Human Services, School Health Department of the McAllen Independent School District, Hidalgo Independent School District, ESC Region 1, IDEA Public Schools, University of Texas Pan American, South Texas College, Respiratory Therapy Program and Children’s Defense Fund.
Figure 4: Project Logic Model

Goal: Increase the number of asthma education, self-management programs and to develop a reportable system of asthma cases among school districts in South Texas to the Texas Asthma Control Program (TACP).

Activities

- Stakeholders:
  * TX Dept of Health
  * Univ. of Texas A&M Health Sciences Center
  * Univ. of Texas Pan American
  * Univ. of Texas, Brownsville
  * Children’s Defense Fund
  * Local Industry
  * EPA
  * Parents of school children
  * Texas Asthma Control Program
  * PTO/PTA

- Materials:
  * EPA Tools for Schools Kits
  * ALA Asthma 101
  * Database management system

Funding:

- * State
- * County
- * EPA
- * TAMHSC

Resources/Inputs

- * Research Asthma resources (Clinical and Environmental)
- * Compile a comprehensive Asthma 101 information module
- * Develop information dissemination methods
- * Conduct Asthma educational meetings
- * Develop a nurse survey regarding IHA
- * Create database
- * Provide survey results to district school systems
- * Evaluate Tools for Schools Program
- * Develop asthma electronic surveillance
- * Develop web-link with Texas Asthma Control Program
- * Develop an environmental survey to identify triggers in each school

Outputs

- * Educational Workshops for health professionals
- * Research articles
- * Reference list
- * Public seminars
- * Media releases
- * PTO meetings
- * School systems meetings
- * Training Promotores
- * Public Service Announcements about asthma
- * Theater script about asthma
- * Survey instrument
- * Survey results
- * Asthma Ed. management plans
- * School IAQ committees

Short & Long Term Outcomes, Impacts

- * Increase Asthma Education in schools (students, parents)
- * Provide asthma training to school nurses, staff, and faculty.
  * Provide CHIP to all those qualified students without medical insurance
  * Implement Individual Health Plan for each student and keep them updated.
  * Increased communication between those with health complaints related to indoor air hazards in schools and schools officials
- * Peer Review Publications
- * Increased number of up to date Independent Health Plans for each student with asthma
- Good asthma control In schools
- Healthy children in schools and less missed school days due to asthma

2009-2010 Fellow Project National Environmental Public Health Leadership Institute
PROJECT OBJECTIVES/DESCRIPTION/DELIVERABLES:

Program Goal: Increase the number of asthma education, self-management programs and to develop a reportable system of asthma cases among school districts in South Texas to the Texas Asthma Control Program (TACP).

Health Problem: Asthma is a widespread public health problem that has increased in the past two decades in the United States and Texas. Children spend one third of the day at school, where policies and the environment play a large role in their health.

Outcome Objective: By September 30, 2010, the targeted schools in South Texas will increase the Independent Health Plans (IHP) for their students with asthma.

Determinant: Identify all students with asthma with and without IHP and update those forms at the beginning of the school year.

Impact Objective: By September 30, 2010, the nine targeted schools in South Texas will have a 100% Independent Health Plans (IHP) for their students with asthma.

Contributing Factors:
1. Lack of medical insurance
2. Lack of resources allocated to asthma education in schools for parents, school nurses and staff
3. Lack of knowledge about number of students with asthma in Texas due that asthma is a non-reportable disease.

Process Objectives:
1. By July 30, 2009, Children’s Health Insurance Program (CHIP) volunteers will be in the targeted schools to offer information to student’s parents (who qualify) and enroll them.
2. By August 30, 2009, asthma education will be offered to health professionals.
3. By October 30, 2010, nine targeted elementary and middle schools will have asthma education and self-management program.

METHODOLOGY:

Events and Activities

Event: Provide information about CHIP

Activities:
- CHIP has numerous volunteers trained to enrolled qualified persons and they will be in all targeted schools during registration.
- A CHIP brochure will be sent home when school begins to capture those qualified families who didn’t have the opportunity to enroll during registration.

**Event:** Asthma Education workshops and CU’s

**Activities:**
- A workshop for school nurses will be offered related to clinical advances in asthma and environmental health.
- A workshop will be offered to public health workers and public nurses of Hidalgo County.
- A workshop will be offered to nursing students of the University of Texas Pan American and respiratory therapist of South Texas College.
- Continuing Education credits will be offered for all those workshops to provide incentives to all those health professionals to attend.

**Event:** Asthma Education classes in targeted schools

**Activities:**
- Nursing and respiratory therapy students will have one hour class with students with asthma during the month of October. An asthma Control test will be performed to develop a baseline of asthma control.
- Parent education classes will be offered through PTO’s. A pre and post test will be performed to those parents to identify their knowledge of asthma.

**Event:** Follow up and Collection of information of students with asthma

**Activities:**
- Nursing and respiratory therapist students will help school nurses to develop a database of students with asthma with the following information: visits to physician, missing school days due to asthma and visits to ER.
- They will also contact parents to ask about their children if they have been absent at school.
- A school excuse form with the reason and diagnosis will be developed at the beginning of the year and provide it to all parents so detailed information is obtained for missing school days from students especially those students with asthma.

**RESULTS:**
The Texas A&M Health Science Center, School of Rural Public Health (TAMHSC-SRPH) has been working for many years in the community and with local agencies to improve the health of Texas residents. In 2001, TAMHSC-SRPH expanded their presence to the Lower Rio Grande Valley, with the establishment of the South Texas Center (STC) in McAllen. TAMHSC-SRPH-STC conducts research on border health issues, provides education to health professionals, and administers outreach programs to disadvantaged populations. With the development of the McAllen Asthma Coalition (MAC) in August 2008, a more focused approach to asthma control was introduced, involving the independent school districts in the area. MAC was created in
collaboration with the Texas Asthma Control Program (TACP) and the TAMHSC-SRPH-SC. Funding for asthma education activities was obtained from the Environmental Protection Agency (EPA) and TACP. MAC has been successful due to the partnership of professionals interested in asthma, specifically among school aged children. The mission of MAC is to empower schools, students with asthma, and their families by providing asthma education in a holistic manner to improve their quality of life. In order to address the social and economic burden of asthma in Texas, TACP, through funding from the Centers for Disease Control and Prevention (CDC), provides data, educational materials, and other resources for health care professionals, state and local coalitions, community-based organizations, schools, and the general public on asthma control and management. The mission of TACP is to decrease preventable asthma morbidity, reduce the severity of asthma symptoms, and decrease the number of emergency department hospital visits and deaths due to asthma. It has been through the collaboration of several academic entities that has been possible to reach several Independent School Districts in the area. The collaborations that have been developed are between: Texas Asthma Control Program (TACP), McAllen Asthma Coalition (MAC), US Environmental Protection Agency (USEPA), the Texas A&M Health Sciences Center, School of Rural Public Health (TAMHSC-SRPH), Hidalgo County Health & Human Services, School Health Department of the McAllen Independent School District, Hidalgo Independent School District, ESC Region 1, IDEA Public Schools, University of Texas Pan American, South Texas College, Respiratory Therapy Program, and Children’s Defense Fund.

The University of Texas Pan American, School of Nursing (UTPA), supports the mission of the College of Health Sciences and Human Services through programs that educate individuals to meet the health care needs of a culturally diverse society. These programs facilitate the development of competent practitioners with critical thinking skills to provide holistic nursing care to individuals, families, groups, and communities. The South Texas College, Respiratory Program (STC-RT) prepares the student with the knowledge, skills, and ethical attitude that will culminate in successful employment of the graduate as a licensed respiratory therapist. In turn, the graduate offers or provides optimal patient care to the community. The project began in June 2009 and has trained 224 health professionals and public health workers, 30 promotoras, and approximately 150 staff in four elementary targeted schools, Parent Teachers Organizations in five elementary targeted schools and 150 students with asthma from participating elementary schools have been trained to not only recognize asthma environmental triggers, but also, to know what do at the onset of an asthma attack. As a result of this project two manuscripts have been accepted in peer review journals: the Public Health Reports and Journal of Asthma & Allergy Educators.

NEXT STEPS:

The next step for this project is to implement the plan as presented by:

- Implement the asthma program to other elementary schools in McAllen ISD, Edinburg ISD, and Hidalgo ISD in the region since Memorandums of Understanding are in place and all education curriculum materials are available.
- Use the information obtained from the study to develop a grant for the National Health Institutes for funding.
• Increasing asthma awareness by educating media, community groups, parents, schools and county officials, etc.
• The next step in those schools where an asthma education program has been already implemented is to use Tools for Schools. A program focused in schools and indoor air pollution.

The ultimate goal of this project is to facilitate the establishment of an asthma education program within all school in the McAllen, Edinburg and Hidalgo School Districts in an effort to provide a the knowledge needed for students, their families and school personnel on how to identify asthma triggers and how to manage their asthma medications.

LEADERSHIP DEVELOPMENT OPPORTUNITIES:

The association with the Environmental Public Health Leadership Institute program during the past year has had a lifelong impact on me. It has been an incredible experience for personal growth and development. I feel extremely grateful to be chosen by the CDC and EPHLI staff as a candidate for the program. The enormous effort that all staff, mentors, coaches and fellows put through the year is impressive and it is with sadness that we have to say thank you for all your time and encouragement to all of us. I have learned new ways to think about my work through organizational learning and systems thinking. The Individual Development Plan that I worked on all year has helped me learn to stay focused and keep on task. Most importantly I am grateful for the opportunity to have met and worked with such a dynamic group of environmental public health professionals. I am honored to be a member of the EPHLI Class of 2010.
ABOUT THE EPHLI FELLOW

Genny Carrillo Zuniga received a Medical Doctor degree in Mérida, Yucatán, México. She received her MPH degree in Health Systems Management and MSPH degree in Environmental Toxicology and Risk Assessment from Tulane University, School of Public Health and Tropical Medicine. Dr. Carrillo Zuniga received her Sc.D. in Environmental Health Science from Tulane University, School of Public Health and Tropical Medicine. Dr. Carrillo Zuniga worked as a Public Health Scientist in the Louisiana Public Health Department of Health. She has participated in environmental research studies, taught graduate public health courses as Assistant Professor at the Medical College of Georgia. She is leading the McAllen Asthma Coalition and is an Assistant Professor at the Texas A&M Health Science Center, School of Rural Public Health, South Texas Center. She is the principal investigator of the asthma study that is going on several schools in McAllen ISD, Edinburg ISD, Hidalgo ISD and IDEA Quest.
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