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# A Pilot Evaluation: Integrated Educational Interventions (IEI) for Asthma Management

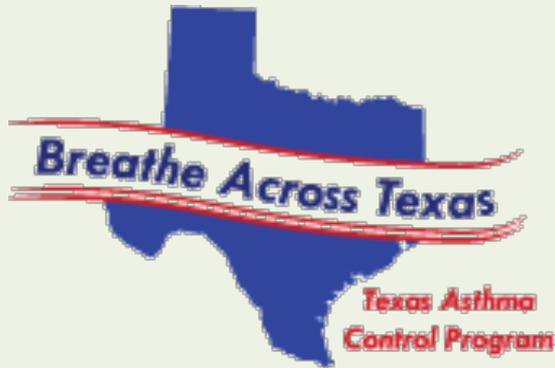


**UNT** | **HEALTH**  
SCIENCE CENTER

SCHOOL OF PUBLIC HEALTH

# PROJECT BACKGROUND

Through funding from the Centers for Disease Control (CDC) and Prevention National Asthma Control Program, the state of Texas established:



The **Texas Asthma Control Program** (TACP) to support asthma surveillance, interventions, evaluation and collaborative infrastructure.

# PROJECT BACKGROUND

## The Evaluation of Integrated Education Interventions (IEI)

TACP contracted with UNTHSC to conduct an evaluation of one of their grantees: the Integrated Educational Interventions (IEI) Program for Asthma Management in South Texas.

# PROJECT BACKGROUND

TACP's **GOALS** of evaluation are to:

1. Ensure that TACP uses its resources effectively and efficiently
2. Demonstrate the value of the program
3. Extend knowledge on best practices to improve asthma outcomes and prevent asthma
4. Build evaluation capacity in order to strengthen outcome assessment

# INTRODUCTION

- Children in Hidalgo County are often absent from school and require emergency room care due to poorly controlled asthma symptoms.
- Families are finding it difficult to manage their child's asthma due to:
  - Limited access to primary care physicians and low-cost medicines
  - Household triggers
  - Little knowledge on asthma care management

# PROGRAM OVERVIEW

Integrated Education Interventions (IEI) for asthma management in South Texas offers:

- A 90-minute educational session on asthma self-management for both parents and children
- Follow-up visits by a Promotora who:
  - Administers surveys
  - Teaches the Asthma and Healthy Homes' curriculum
  - Teaches the 7 Principles of Healthy Homes

**Program: Integrated Environmental Asthma Management to Improve the Quality of Life for Hispanic Children with Asthma**

**Situation:** Hidalgo County, Texas has a high rate of childhood asthma at 10% compared to 7.4% statewide, and a high rate of childhood asthma-related hospitalizations at 26.2 per 10,000 vs. 17.4 per 10,000 statewide. Many children are missing school and/or going to the emergency room due to their asthma. The high asthma prevalence rate among children in Hidalgo County is attributed to lack of asthma education, lack of consistent medical care, a high poverty rate of 35.2% vs. 17% statewide, and exposure to indoor and outdoor environmental asthma triggers.

Inputs	Outputs		Outcomes -- Impact		
	Activities	Outputs	Short <i>Knowledge</i>	Medium <i>Action</i>	Long <i>Conditions</i>
<p>Texas A&amp;M University School of Rural Public Health – Colonias Program</p> <p>McAllen Independent School District</p> <p>Federally Qualified Health Centers</p> <p>Rio Grande Hospital</p> <p>Edinburg Children’s Regional Hospital</p> <p>South Texas Center Respiratory Therapy Department</p> <p>Texas Department of State Health Services, Health Promotion and Chronic Disease Prevention Section</p> <p>Asthma Patients</p> <p>Families/Caregivers of Asthma Patients</p> <p>Promotoras and Health Educators</p>	<p>Identify and enroll low income/uninsured Hispanic children with poorly controlled asthma, and their parents to participate in an asthma education and case management intervention.</p> <p>Conduct hospital-based asthma education to enrolled children with asthma on proper asthma self-management and control.</p> <p>Conduct hospital-based asthma education to parents of children with asthma who are enrolled in the program.</p> <p>Conduct in-home case management visits of enrolled families to identify and mitigate household triggers, and develop/monitor an asthma action plan for the child.</p> <p>Refer child/family to clinician for follow-up.</p>	<p>Number of low/income Hispanic children with poorly controlled asthma and families identified and enrolled in asthma education and case management intervention.</p> <p>Number of children with asthma completing the hospital-based asthma education training.</p> <p>Number of parents of children with asthma completing the asthma education training.</p> <p>Number of in-home case management visits conducted.</p> <p>Number of Asthma Home Environment and Trigger Surveys administered.</p> <p>Number of asthma action plans developed.</p> <p>Number of clinic referrals made.</p>	<p><b>Management</b></p> <ul style="list-style-type: none"> <li>Children learn how to detect warning signs of asthma, how to avoid triggers, and how to manage their asthma, measured by pre- and post- cognitive tests.</li> <li>Parents/families learn how to manage their child’s asthma, measured by pre- and post- cognitive tests.</li> </ul> <p><b>Triggers</b></p> <ul style="list-style-type: none"> <li>Parents/families learn how to reduce the number of asthma triggers in the home.</li> </ul> <p><b>Medical Care Access</b></p> <ul style="list-style-type: none"> <li>Parents learn how to access low cost medicines and community clinics.</li> </ul>	<p><b>Management</b></p> <ul style="list-style-type: none"> <li>Children with asthma have increased self-management capability;</li> <li>Use their medicines as prescribed; and</li> <li>Avoid asthma triggers.</li> </ul> <p><b>Triggers</b></p> <ul style="list-style-type: none"> <li>Children with asthma experience reduced exposure to environmental triggers in the home.</li> </ul> <p><b>Medical Care Access</b></p> <ul style="list-style-type: none"> <li>Children with asthma have an established clinic provider/medical home.</li> <li>Children with asthma properly use their medications as demonstrated by clinician.</li> <li>Clinician provides oversight and guidance with children’s asthma action plans.</li> <li>Children with asthma adhere to their asthma action plans.</li> </ul>	<p><b>Management</b></p> <ul style="list-style-type: none"> <li>Children have improved asthma management as measured by the Child Health Survey for Asthma.</li> <li>Children have sustained reduction in asthma severity, as measured by the Asthma Control Test at baseline and at three month intervals</li> <li>Children experience reduced asthma related school absenteeism.</li> <li>Children experience reduced emergency department visits and hospitalizations due to their asthma.</li> <li>Disparities among Hidalgo County children with asthma relating to self-management and access to medical care are reduced.</li> <li>Children with asthma experience improved quality of life as measured by the Quality of Life Survey.</li> </ul>

# THE TARGET POPULATION

- Almost all of the participants live in colonias near McAllen.
- Many homes lack basic infrastructure such as sewage, electricity, water, or trash service.
- Homes are built in stages as people can afford materials.
- Colonias are prone to diseases such as hepatitis A, salmonellosis, dysentery, cholera, tuberculosis and others.
- Health conditions are made worse by lack of medical care and long travel times to health care facilities.

# EVALUATION METHODS

- The IEI program staff collect baseline data from parents and children at the 90-minute long asthma control education session and the first home visit.
- Follow up data is collected by IEI every three months by phone or home visits for the year following the education session.
- The evaluation team interviewed and shadowed the Promotora as she conducted two home visits.

# OUTCOMES MEASURED AND SURVEYS

- **Knowledge:**

A survey is administered before and after the educational session (Asthma Curriculum Knowledge test) to parents and children. Another questionnaire (Health Homes Survey) is administered to parents at the first home visit.

- **Asthma Severity:**

Children are asked to complete the Childhood Asthma Control Test (C-ACT) at the first educational session and every 3 months thereafter.

- **Asthma Management (CHSA):**

During the first home visit, the Promotora administers the American Academy of Pediatrics' Child Health Survey for Asthma (CHSA) to the parents or caregivers.

- CHSA assesses the impact of asthma and treatment in the areas of physical and emotional health as well as activity.
- It also covers: health care utilization, asthma triggers, and family demographics.

# OUTCOMES MEASURED AND SURVEYS

- **Asthma Triggers:** The Asthma Home Environment and Trigger (AHEAT) checklist is used to assess home-based asthma triggers. It is administered at the first home visit and again at 12 months.



# EVALUATION QUESTIONS



1. How well will the AHEAT checklist serve as an evaluation tool for the IEI program? Is it sufficiently culturally relevant? Will it adequately capture positive changes that families are making? What challenges does the Promotora face when administering it?
2. Has the asthma severity of participating children changed since baseline?
3. How well will the battery of tools selected by the IEI program meet program evaluation objectives to measure short, medium and long term outcomes. Are they suitable for this program? Is the sequencing of administration appropriate for the intervention model?

# MIXED METHOD EVALUATION DESIGN

- Analysis of survey/assessment data collected by IEI staff members
- Shadowing the Promotora at home visits
- Interviewing the Promotora about cultural relevancy

# C-ACT SURVEY FINDINGS

- The C-ACT scores indicated that 62% of the children at baseline reported well controlled asthma symptoms.
- Among children with a follow-up assessment (n=10), the proportion of children with well-controlled asthma symptoms increased from 60% to 80% between the educational session and a three month follow-up interview by phone
- Two Items on the Childhood ACT Survey:

**Have your child complete these questions.**

1. How is your asthma today?

 <b>0</b> Very bad	 <b>1</b> Bad	 <b>2</b> Good	 <b>3</b> Very good
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2. How much of a problem is your asthma when you run, exercise or play sports?

 <b>0</b> It's a big problem, I can't do what I want to do.	 <b>1</b> It's a problem and I don't like it.	 <b>2</b> It's a little problem but it's okay.	 <b>3</b> It's not a problem.
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SCORE

# ASTHMA CURRICULUM KNOWLEDGE RESULTS

- Created by IEI
- There was a lack of variability in parent's responses.
- We recommend several changes:
  1. Administer the test to children only.
  2. Maintain a consistent focus on knowledge and beliefs rather than behavior.
  3. Change from a yes/no answer set to one with more variability (e.g., more than two possible answers per question).

# HEALTHY HOMES SURVEY RESULTS

- Created by IEI
- At Pretest, 9 of the 14 items were answered correctly by more than 90% of the participants.
  - This is a concern for a longitudinal evaluation since it limits the amount of positive change that can be measured.
- We recommend administering the survey at the first education session rather than first home visit and consider word changes to improve clarity of meaning.

# CHILDREN'S HEALTH SURVEY FOR ASTHMA (CHSA) RESULTS

- Overall, 9 out of 16 families reported at least some frequency of their children's asthma symptoms or problems in the prior 4 weeks.
- Some families were administered the baseline CHSA on their first home visit (n=6) and some on their second home visit (n=10).
- Due to a small sample, we used non-parametric tests to compare median values of the 5 CHSA subscales between children with recent symptoms (n=9) versus those with no recent symptoms (n=7). We found that differences were only observable for the Physical Health subscale (p=.041).

# CHILDREN'S HEALTH SURVEY FOR ASTHMA (CHSA) RESULTS

- In this small sample, the mean scores clustered between 70 and 89, which points to a concern about a potential ceiling effect.
- IEI may want to consider administering the CHSA at the start of the asthma management class rather than the first home visit to reduce the likelihood that the effects of taking the class are appearing in the baseline administration of the tool .

# ASTHMA HOME ENVIRONMENT AND TRIGGER (AHEAT) RESULTS

- The tool was administered to 20 families and appeared to be useful for diagnostic assessment, but needs revision to serve as an evaluation instrument to track changes over time.
- Our recommendations:
  - Reword items so they reflect a particular time period.
  - Establish a list of potential goals or protective behaviors that could be tracked to determine if they change over time.

# RECOMMENDATIONS



- Consider making survey modifications such as:
  - Condensing the questionnaire and minimizing repetition
  - Improving the order of survey items
  - Improving cultural relevance
  - Improving sensitivity to income barriers and privacy
- Link the selection of survey items to the revised logic model and consider removing unrelated or repetitive items.
- Consider using the Center for Disease Control (CDC)'s Behavioral Risk Factors Surveillance System's (BRFSS) asthma items to allow benchmark comparisons.

# CULTIVATING A CULTURE OF EVALUATION



- Make surveys useful and relevant
  - Develop tools that allow families and the Promotora to track progress towards reducing household triggers. Make evaluation tools relevant and useful to as many as possible.
  - Involve all appropriate IEI stakeholders, Promotoras, educators, and volunteers in the revision of an evaluation plan and survey tools.
  - Be cautious about administering tools with too many overlapping areas of assessment (e.g., try to avoid asking the same types of questions repeatedly).

# LIMITATIONS/BARRIERS

- **Sample size.** The sample size was too small to fully explore statistical relationships. During the next funding cycle, there should be adequate time to collect a larger sample, as well as enough data to compare pre and post program measures.
- **Lack of a causal evaluation design.** Without control and comparison groups, we cannot presume that changes occurring in participant outcomes can be attributed to the intervention.

# LESSONS LEARNED

- In its current form, the AHEAT is geared more towards being a diagnostic tool rather than an evaluative tool.
- Attrition is another issue IEI has been experiencing as families move through the program. This could be influenced by the amount of time devoted to administering surveys. Reducing the number of survey items and continuing to provide education and incentives may help to improve retention.

# CONCLUSION: Evaluation Question 1

Will the AHEAT work well to evaluate changes in the management of household triggers over time?

- While the sample size was small, it would appear that the AHEAT functions best as a diagnostic tool that can guide goal setting and planning with the families. The survey needs cultural, language, and formatting modifications in order to be a tool to evaluate changes over time.

## CONCLUSION: Evaluation Question 2

Has the asthma severity of participating children changed since baseline?

- Analysis was limited since the sample size was small.
- It will be important to administer the C-ACT in the same way (e.g., in person with children) each time.

## CONCLUSION: Evaluation Question 3

How well will the battery of tools selected by the IEI program meet program evaluation objectives to measure short, medium and long term outcomes?

- It would appear the C-ACT is an appropriate measure for the program as participants understood the items, it is easy to score, and it would be easy to track changes over time with this tool.
- The CHSA does a good job of capturing the frequency and severity of asthma symptoms; but it may be better to administer earlier (at the first education session) to track parents' perceptions of asthma severity changes.

# CONCLUSION: Evaluation Question 3 Continued

- It may be helpful to examine redundancy between the tools, consider eliminating subscales, and identify items in the BRFSS that may allow for benchmarking.
- Both knowledge tests need some reworking to accurately track outcomes over time. Recommendations include:
  - changing from a dichotomous to a response set that includes more variability,
  - rethink the use of items regarding behavior,
  - select only one tool to be administered to parents at baseline (prior to the educational session) and again at follow-up home visits (rather than immediately after the education sessions).

# CONCLUSION

- In the future, IEI might consider using focus groups to ensure that messages are being interpreted by the target population as intended, that survey items make sense to the participants, and that surveys are measuring what they are intended to measure.
- Survey administration seems to dominate follow-up visits. Reducing the number of survey items would allow the Promotora to spend more time at each at each visit offering support and guidance as necessary.