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Title: Academic Achievement in Children with Asthma

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Academic Achievement in Children with Asthma

Abstract

Background: Asthma is the most common chronic disease of childhood with a prevalence that is 1.6 times greater in African American (AA) children than in Non-Hispanic White children.¹ Nationally, 700,000 children are seen for asthma in Emergency Departments (ED) every year, 1% of which are seen at Children's National Health System (CN) in Washington, DC. School performance and school attendance has not been well studied in urban children with asthma, especially at the middle school level.

Objective: Our purpose is to test the hypothesis that children with asthma have worse school performance than middle school children without asthma in Washington DC public schools.

Methods: We will conduct a cross-sectional observational study of children in 3rd-8th grade in the 2015-2016 academic year with and without asthma recruited from the Emergency Departments and the IMPACT DC asthma clinic at CN. We will collect demographic information, asthma severity information (for cases), and request that parents mail report cards and standardized test scores directly to the investigators. We will use multivariable linear and logistic regression to determine if the presence of asthma is associated with school performance.

Research Plan

A. Background and Specific Aims

Asthma is the most common chronic disease of childhood with a prevalence that is 1.6 times greater in African American (AA) children than in Non-Hispanic White children.¹ Nationally, 700,000 children are seen for asthma in Emergency Departments (ED) every year, 1% of which are seen at Children's National Medical Center (CN) in Washington, DC. The asthma prevalence rate among African America (AA) children and teens in Washington, DC is 20% higher than the national rate² and overall ED utilization rates for asthma are 4.3 times the national rate.³ In 2007, approximately 10.5 million school days were lost due to asthma.¹

Asthma severity may impact academic performance due to increased absenteeism. A study of Canadian school children showed that children with the most severe asthma had the lowest math and reading scores.⁴ Tsakiris also showed that children with asthma on inhaled corticosteroids had better academic achievement than children with asthma not on long-term controller therapy, suggesting that poor control is associated with worse school performance.⁵

However, academic performance is dependent on many other factors, such as socio-economic status of the local district and resources available. Availability of skilled nursing differs between schools, impacting children with asthma; Hillemeier's study of children with asthma in Pennsylvania schools showed that less than half of secondary schools had adequate school nurse coverage, and that this reduced services provided to children with asthma.⁶ Children whose asthma is not managed at school may be absent more often. Parental education also plays a part in a child's school performance. Tsakiris et al, showed that in Greece, lower parental education level was independently associated with poor school performance in children with asthma.⁵

Early adolescence (ages 10-13) is identified as a time of great transition with both developmental and biologic changes; in this time period male children with asthma generally improve and female with asthma develop worsening asthma, likely due to hormone effects. It has been shown that programs to reduce asthma symptoms in both younger children (elementary school) and older children (high school) do not work well in early adolescent children (middle school).⁷

In addition, despite the National Asthma Education Prevention Program (NAEPP, 2007) guidelines that encourage the assessment of the quality of life (QOL) in children, there has been minimal research on QOL in children with asthma.

Given the scarcity of information on the association between pediatric asthma and academic achievement, school attendance, and the QOL, and the need to establish baselines within individual communities, we have designed a study to examine the association between asthma in children in grades 3-8 and academic achievement, school attendance, and the QOL. ***Our overall hypothesis is that children with asthma will have worse school performance compared to children without asthma.***

Specific Aim 1: To determine the association between asthma and school performance by comparing grade point averages (GPA) in children from 3rd-8th grade with and without asthma. We will enroll an additional 60 children in grades 3-8 with asthma (cases) from the ED/IMPACT DC and compare them with a group of 60 children in grades 3-8 without asthma (controls) recruited from the ED. Report cards will be collected between May 2016-November 2016 or until 60 cases and 60 controls have been recruited, and GPAs will be compared. We expect children with asthma will have lower GPAs .

B.**Significance:**

School achievement in elementary and middle school students with asthma is not well understood; this study will be pivotal in identifying if middle school students with asthma in the Washington DC are performing more poorly than their non-asthmatic counterparts.

C. Preliminary studies

We have not previously studied academic success in children with asthma.

D. Research Design and Methods

We are proposing a cross-sectional case-control observational study of children in grades 3-8 to compare academic achievement and school attendance between children with and without asthma. 60 children with asthma (cases) will be recruited from the IMPACT DC clinic and/or ED and 60 children without asthma (controls) will be recruited from the ED. Recruitment will occur from May 2016 through November 2016.

Inclusion criteria for cases include asthma diagnosed by a clinician for greater than 1 year with a history of exacerbation requiring systemic corticosteroids within the past 2 years. Controls will have no history of asthma. All children, cases and controls, must (1) be in grade level 3-8 in the 2015-2016 school year, attend public school in Washington, DC (DCPS) and reside in their school district;(2) be accompanied by their parent or legal guardian. Exclusion criteria for cases and controls will be (1) presence of a chronic medical condition other than asthma or (2) a family that does not speak English or Spanish.

Demographic Data for Cases and Controls

Demographic information will be obtained by a structured interview; the questionnaire (Appendix A) will be used on both cases and controls: the parent/caregiver will be asked about the child's age, gender, race/ethnicity, insurance type. health care utilization, medications usage, highest level of education of the parent/ caregiver, income of the household, and parental report of school services. Cases will complete an additional 11 questions to determine asthma severity to determine NAEPP score and the Asthma Control Test (ACT) score (Appendix F and G).

We will utilize the child's electronic medical record (Cerner for ED charts and eClinicalWorks for the IMPACT DC charts) to determine insurance type and health care utilization. We will also determine each participant's weight and height from the medical record and will access medical records for the period of time we are collecting report cards for to determine clinical information, such as number of ED visits and hospitalizations over the 14 month period that the report cards cover (August 2015-November 2016).

Reporting of Academic Achievement and School Attendance

At the time of recruitment, families will be given a self-addressed, stamped envelope to send the child's 2013 first term (if available), standardized test score report (if available), and final report card to the research team. All report cards/score reports will be returned to the family via US Mail. Academic achievement, standardized test scores, and school attendance will be recorded from the report cards. All report cards in the DCPS system use the same grading scale..

The Self-Perception Profile

The self-perception profile is a reliable validated 6 question questionnaire for children in grades 6-8 that allows a child to self-evaluate their feelings about their engagement in school and their own school performance.

Reporting of the Quality of Life using the Peds QL 4.0 Form

QOL will be measured using the validated PedsQL 4.0 for children, teens, and parents (Appendices B, C, D, and E). The PedsQL 4.0 has four scales with 23 questions which ascertain physical functioning, emotional functioning, social functioning, and school functioning. A 5-point Likert scale is used in the child self-report and for the parent proxy reports. Items are reverse scored and linearly transformed to a 0 to 100 scale (0=100, 1=75, 2=50, 3=25, and 4=0), so higher scores indicate better QOL.

E. Statistical analysis Descriptive statistics will be used to analyze demographic variables (rates, proportions, means, medians, ranges). Univariate comparisons will be performed using appropriate categorical or continuous statistical analyses. Multivariate testing will be performed using logistic and/or liner regression where appropriate.

Sample Size: The study will be powered on the proportion of patients in each group with a grade point average >3.0. The overall proportion of DC public middle school students in the 2012-2013 school year with a GPA >3.0 was approximately 35%. Assuming that this figure is similar for children without asthma (controls), we will need 70 cases and 70 controls to have 80% power detect a 20% absolute difference in the proportion of children with asthma (cases) with a grade point average >3.0 (alpha = 0.05, two-sided).

We have chosen to include 120 children in the expansion of this original study, as we expect that less than 50% of all included patients will return their final year report cards via the self-addressed, stamped envelope.

F. Human Subjects

A convenience sample of potential participants' guardians will be approached in the temporal sequence that they are available either in the emergency department or in the IMPACT DC Asthma Clinic, informed about the research study, and invited to participate. Informed consent will be obtained from all guardians.

After obtaining informed consent, trained research assistants and/or the investigators will use extant hospital electronic data and information obtained from questionnaires as the source of research material for this study.

1. The risks of this study include inadvertent disclosure of protected health information. This risk does not exceed the daily risk of inadvertent disclosure of patients' protected health information during ED operations where patients' records are accessed through the ED tracking system of Logicare and the electronic medical records of EPRS.
2. There is the risk of feeling uncomfortable during the questionnaires; families will be told that some of the questions may make them uncomfortable and they are welcome to leave the study at any time, without penalty, if they feel uncomfortable. Alternatively, they may choose to leave questions unanswered.
3. There are no direct benefits to study participants. However, the knowledge gained from this study may allow us to identify a cohort of patients at special risk, for whom a targeted intervention would be appropriate.

4. Therefore, the risks are reasonable in relation to the benefits.

G. Risks and Side Effects

Questionnaires

Participants may find some of the questionnaires too personal; they will be offered the opportunity to refuse to answer any questions that make them feel uncomfortable. There is also the risk of breach of confidentiality; all participants will be assigned a random study number. This study number will be used to identify all questionnaires. Coding for the study numbers will be secured on a password protected file on the PI's hospital-issued laptop and stored on the secure CNMC server. We will store the study data in locked cabinets or offices.

H. Benefits

There are no direct benefits to participants.

I. Outside Consultants/Collaborators

None.

J. Contractual Agreements

None.

K. Costs To Subjects:

There is no cost to subjects.

L. Conflicts Of Interest:

There are no conflicts of interest.

M. Confidentiality:

The investigators will use reasonable measures to assure the security of these data, including locked office doors and file cabinets where paper records are stored, and secure, password-protected, computer software systems where electronic data are stored. The major risks to patients are the risks to confidentiality by inadvertent disclosure of protected health information. All paper data will be kept in the PI's locked office in locked file cabinets, to which only the PI will have keys for. All protected health information will be secured in password protected databases on the hospital Emergency Medical and Trauma Center (EMTC) drive. All research data will be de-identified and coded to further protect patient confidentiality. Code numbers and their respective medical record numbers will be kept in a separate password-protected database on the hospital's EMTC server. Passwords will only be known to the PI. These risks are reasonable in relation to the future anticipated benefits, which include identifying a future cohort of patients who might benefit from targeted interventions. The risk of inadvertent disclosure of protected health information is no more than minimal and no more than encountered on any patient visit to the ED.

N. Subject Compensation:

There will be no compensation for subjects on the expanded continuing portion of this study.

O. Facilities and Equipment

Existing departmental facilities will be used.

P. References & Literature Cited

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5. Tsakiris A, Iordanidou M, Paraskakis E, et al. The presence of asthma, the use of inhaled steroids, and parental education level affect school performance in children. *BioMed research international*. 2013;2013:762805.
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7. Clark NM, Dodge JA, Thomas LJ, Andridge RR, Awad D, Paton JY. Asthma in 10- to 13-year-olds: challenges at a time of transition. *Clin Pediatr (Phila)*. Oct 2010;49(10):931-937.

Appendix A



Case#

Understanding the Impact of Asthma in Academic Achievement, School Attendance, and in the Quality of Life in Middle school aged children Questionnaire**Baseline Measure**

These questions will ask about your child's background and asthma history. In order for this study to be useful for families of children with asthma, it is important that everyone give us accurate answers. IMPACT DC team members will not share or discuss any personal information without your permission.

If you have any questions, please let me know. If not, we can start.

****Note to Interviewers:**

- **Bold** scripting is meant to be read to participants.
- *[Italicized in brackets]* scripting is a note for clarification that is not meant to be read aloud.

General Information

Interviewer's Initials _____

Interview Date _____ / _____ / _____ (mm/dd/yy)

Time of Interview Start _____ : _____ *[based on 24-hr clock]*

Patient's Initials _____

Patient's Date of Birth _____ / _____ / _____ (mm/dd/yyyy)

Patient's Gender Male Female

Which grade did your child complete in the last 12 months at school _____

Two best contact phone numbers _____ and _____

Best contact Address _____

Health Care Utilization

Let me ask you about your visits to any hospitals other than Children's National on Michigan Avenue and the Children's National Emergency Room at the United Medical Center:

In the last 12 months, have you been to an Emergency Room other than the Children's Emergency Room at either Children's National or the United Medical Center?

1. No *[Skip to next section]*
 Yes *[go to question 5]*

2. How many times in the last 12 months has (CHILD) been to an Emergency Room other than the Children's Emergency Room at either Children's National or the United Medical Center?
_____ times

3. How many times in the last 12 months has (CHILD) been admitted to a hospital other than Children's National Medical Center for asthma?
_____ times

4. How many times in the last 12 months has (CHILD) been in the PICU (Pediatric Intensive Care Unit) of a hospital other than Children's National Medical Center?

_____ times

Current Medication Use

[Do not read options for types of medicines. Just read question as worded, and then record actual response and classify medication. Do not show pictures or demos/samples of asthma medicines. If name unknown but respondent describes medication, or medication is unknown, write down actual response and classify as "Other".]

5. During the past two days, did [CHILD] take or use any medications including pills, syrups, or inhaled medications?

Yes No [skip to question 6] Don't know [skip to question 7]

If yes:

Which medicines? _____

Asthma Medications:

- Inhaled or nebulized steroid (ex. Pulmicort, Flovent, QVAR, Asmanex)
- Short-acting bronchodilator (ex. albuterol, Ventolin, ProAir, Xopenex)
- Long-acting bronchodilator (ex. salmeterol, formoterol)
- Inhaled steroid/LABA combination (ex. Advair, Symbicort, Dulera)
- Long-acting leukotriene inhibitor (ex. Singulair)
- Oral Steroid (Prednisone, Prednisolone, Dexamethasone)
- Other: _____

Allergy Medications:

- Antihistamines
- Intranasal Steroid
- Other: _____

Non-asthma/allergy medication:

- _____

Adherence:

6. Does your child take a daily medicine?
 Yes No [Skip to question 7]

What is the name of this medication: _____

Asthma Medications:

- Inhaled or nebulized steroid (ex. Pulmicort, Flovent, QVAR, Asmanex)
- Short-acting bronchodilator (ex. albuterol, Ventolin, ProAir, Xopenex)
- Long-acting bronchodilator (ex. salmeterol, formoterol)
- Inhaled steroid/LABA combination (ex. Advair, Symbicort, Dulera)
- Long-acting leukotriene inhibitor (ex. Singulair)
- Oral Steroid (Prednisone, Prednisolone, Dexamethasone)
- Other: _____

Allergy Medications:

- Antihistamines
- Intranasal Steroid

Other: _____

Non-asthma/allergy medication: _____

Demographic / Family History

Finally, research studies always ask a few questions about your family background.

7. What do you consider [CHILD]'s race to be? [Read options and circle all that apply]

<input type="checkbox"/> Black or African-American	<input type="checkbox"/> White
<input type="checkbox"/> Asian	<input type="checkbox"/> American Indian or Alaska Native
<input type="checkbox"/> Native Hawaiian/Pacific Islander	<input type="checkbox"/> Some other race: _____

1. What do you consider [CHILD]'s ethnicity to be? [Read options]

Hispanic

Non-Hispanic

Other: _____

8. Do any of [CHILD]'s parents, brothers, or sisters have asthma? *[Include those who do and do not live in household.]*

Yes No Don't know

9. How many days of school did your child miss over the last school year due to asthma?

10. Does your child receive any special services at school? What are they?

11. What is the highest grade or school level that you have completed?

Never attended school

Grade 1-11

GED or 12th grade

Some college/technical/vocational training

College graduate

Other: _____

12. Keeping in mind the various possible sources of income for your household, such as a job, supplemental security income (SSI) or disability, social security, public assistance, food stamps, unemployment compensation, and child support, what was the total income during [LAST CALENDAR YEAR] from all sources for everyone in your household? Please point to the answer closest to your total household income.

[Show categories listed on hand card. Ask for last full calendar year. If the respondent cannot give a figure, go over each source of income and get an estimate per month and multiply by twelve]

<input type="checkbox"/> \$5,000 or less	<input type="checkbox"/> \$5,001 - \$10,000	<input type="checkbox"/> \$10,001 - \$20,000
<input type="checkbox"/> \$20,001 - \$30,000	<input type="checkbox"/> \$30,001 - \$40,000	<input type="checkbox"/> \$40,001 - \$50,000
<input type="checkbox"/> \$50,001 - \$60,000	<input type="checkbox"/> \$60,001 - \$70,000	<input type="checkbox"/> \$70,001 - \$80,000
<input type="checkbox"/> \$80,001 - \$90,000	<input type="checkbox"/> \$90,001 - \$100,000	<input type="checkbox"/> \$100,001 - \$150,000
<input type="checkbox"/> \$150,001 - \$200,000	<input type="checkbox"/> \$200,001 - \$250,000	<input type="checkbox"/> \$250,001 or greater
<input type="checkbox"/> Refused	<input type="checkbox"/> Don't know	

Thank you very much for answering all of my questions. Your answers will help us improve care for children with asthma. As we discussed earlier, you will be compensated with a \$25 gift card after mailing us your child's report card.

[Caregiver given copy of informed consent document]

Time of Interview End _____ : _____ *[based on 24-hr clock]*

Interviewer Comments

Please indicate if respondent had difficulty answering any of the questions, you feel they provided inaccurate or misleading responses, there were any unusual circumstances at the time of the interview, or the respondent had a language or literacy problem. Please reference specific questions if appropriate.

Chart Review

[To be completed after visit in IMPACT DC Asthma Clinic is completed]

From IMPACT DC Clinic Form:

13. Final Asthma Classification [based on clinician's assessment]

- Intermittent
- Mild Persistent
- Moderate Persistent
- Severe Persistent

14. Insurance type

12a. Name of child's insurance provider: _____

12b. Insurance type:

- Public
- Private
- None
- Unknown

15. Zip code of residence: _____

16. Oral Steroids: How many courses of oral steroids in the prior 12 months: _____

17. If applicable: If a patient is already using an ICS, what was the number of puffs displayed on the back of the inhaler they are currently using?
_____ of puffs

From Medical Records:

Health Care Utilization [*from medical records, visits to Children's Hospital or any of the Goldberg Center Children's Health Centers*]:

Emergency Department visits for asthma

18. Number of ED visits in prior 12 months: _____

19. Hospitalizations for asthma _____

20. Number of hospitalizations in prior 12 months: _____

21. PICU Admissions

Number of PICU admissions in the last 12 months: _____

21. Urgent care visits for asthma (if Goldberg Center patient)

Number of urgent care visits in prior 12 months: _____

Appendix B

PedsQLTM
Pediatric Quality of Life
Inventory
Version 4.0
PARENT REPORT for CHILDREN (ages 8-12)

DIRECTIONS

On the following page is a list of things that might be a problem for **your child**.

Please tell us **how much of a problem** each one has been for **your child**

during the **past ONE month** by circling:

0 if it is **never a problem**

1 if it is **almost never a problem**

2 if it is **sometimes a problem**

3 if it is **often a problem**

4 if it is **almost always a problem**

There are no right or wrong answers.

If you do not understand a question, please ask for help.

*In the past **ONE month**, how much of a **problem** has your child had with*

PHYSICAL FUNCTIONING (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. Walking more than one block	0	1	2	3	4
2. Running	0	1	2	3	4
3. Participating in sports activity or exercise	0	1	2	3	4
4. Lifting something heavy	0	1	2	3	4
5. Taking a bath or shower by him or herself	0	1	2	3	4
6. Doing chores around the house	0	1	2	3	4
7. Having hurts or aches	0	1	2	3	4
8. Low energy level	0	1	2	3	4

EMOTIONAL FUNCTIONING (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. Feeling afraid or scared	0	1	2	3	4
2. Feeling sad or blue	0	1	2	3	4
3. Feeling angry	0	1	2	3	4
4. Trouble sleeping	0	1	2	3	4
5. Worrying about what will happen to him or her	0	1	2	3	4
SOCIAL FUNCTIONING (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. Getting along with other children	0	1	2	3	4
2. Other kids not wanting to be his or her friend	0	1	2	3	4
3. Getting teased by other children	0	1	2	3	4
4. Not able to do things that other children his or her	0	1	2	3	4
5. Keeping up when playing with other children	0	1	2	3	4
SCHOOL FUNCTIONING (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. Paying attention in class	0	1	2	3	4
2. Forgetting things	0	1	2	3	4
3. Keeping up with schoolwork	0	1	2	3	4

4. Missing school because of not feeling well	0	1	2	3	4
5. Missing school to go to the doctor or hospital	0	1	2	3	4

Appendix C

TM
PedsQL
 Pediatric Quality of Life
 Inventory

Version 4.0
CHILD REPORT (ages 8-12)

DIRECTIONS

On the following page is a list of things that might be a problem for you.

Please tell us **how much of a problem** each one has been for you
 during the **past ONE month** by circling:

- 0** if it is **never** a problem
- 1** if it is **almost never** a problem
- 2** if it is **sometimes** a problem
- 3** if it is **often** a problem
- 4** if it is **almost always** a problem

There are no right or wrong answers.
 If you do not understand a question, please ask for help.

*In the past **ONE month**, how much of a **problem** has this been for you ...*

ABOUT MY HEALTH AND ACTIVITIES (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. It is hard for me to walk more than one block	0	1	2	3	4
2. It is hard for me to run	0	1	2	3	4
3. It is hard for me to do sports activity or exercise	0	1	2	3	4
4. It is hard for me to lift something heavy	0	1	2	3	4
5. It is hard for me to take a bath or shower by myself	0	1	2	3	4
6. It is hard for me to do chores around the house	0	1	2	3	4
7. I hurt or ache	0	1	2	3	4
8. I have low energy	0	1	2	3	4

ABOUT MY FEELINGS (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. I feel afraid or scared	0	1	2	3	4
2. I feel sad or blue	0	1	2	3	4
3. I feel angry	0	1	2	3	4
4. I have trouble sleeping	0	1	2	3	4
5. I worry about what will happen to me	0	1	2	3	4

How I GET ALONG WITH OTHERS (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. I have trouble getting along with other kids	0	1	2	3	4
2. Other kids do not want to be my friend	0	1	2	3	4
3. Other kids tease me	0	1	2	3	4
4. I cannot do things that other kids my age can do	0	1	2	3	4
5. It is hard to keep up when I play with other kids	0	1	2	3	4
ABOUT SCHOOL (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. It is hard to pay attention in class	0	1	2	3	4
2. I forget things	0	1	2	3	4
3. I have trouble keeping up with my schoolwork	0	1	2	3	4
4. I miss school because of not feeling well	0	1	2	3	4
5. I miss school to go to the doctor or hospital	0	1	2	3	4

Appendix D

PedsQLTM
Pediatric Quality of Life
Inventory

Version 4.0
PARENT REPORT for TEENS (ages 13-18)

DIRECTIONS

On the following page is a list of things that might be a problem for **your teen**.

Please tell us **how much of a problem** each one has been for **your teen**
during the **past ONE month** by circling:

- 0** if it is **never** a problem
- 1** if it is **almost never** a problem
- 2** if it is **sometimes** a problem
- 3** if it is **often** a problem
- 4** if it is **almost always** a problem

There are no right or wrong answers.
If you do not understand a question, please ask for help.

*In the past **ONE month**, how much of a **problem** has your teen had with ...*

PHYSICAL FUNCTIONING (PROBLEMS WITH...)	Never	Almost Never	Sometimes	Often	Almost Always
1. Walking more than one block	0	1	2	3	4
2. Running	0	1	2	3	4
3. Participating in sports activity or exercise	0	1	2	3	4
4. Lifting something heavy	0	1	2	3	4
5. Taking a bath or shower by him or herself	0	1	2	3	4
6. Doing chores around the house	0	1	2	3	4
7. Having hurts or aches	0	1	2	3	4
8. Low energy level	0	1	2	3	4

EMOTIONAL FUNCTIONING (PROBLEMS WITH...)	Never	Almost Never	Sometimes	Often	Almost Always
1. Feeling afraid or scared	0	1	2	3	4
2. Feeling sad or blue	0	1	2	3	4
3. Feeling angry	0	1	2	3	4
4. Trouble sleeping	0	1	2	3	4
5. Worrying about what will happen to him or her	0	1	2	3	4

SOCIAL FUNCTIONING (PROBLEMS WITH...)	Never	Almost Never	Sometimes	Often	Almost Always
1. Getting along with other teens	0	1	2	3	4
2. Other teens not wanting to be his or her friend	0	1	2	3	4
3. Getting teased by other teens	0	1	2	3	4
4. Not able to do things that other teens his or her age can do	0	1	2	3	4
5. Keeping up with other teens	0	1	2	3	4

SCHOOL FUNCTIONING (PROBLEMS WITH...)	Never	Almost Never	Sometimes	Often	Almost Always
1. Paying attention in class	0	1	2	3	4
2. Forgetting things	0	1	2	3	4
3. Keeping up with schoolwork	0	1	2	3	4
4. Missing school because of not feeling well	0	1	2	3	4
5. Missing school to go to the doctor or hospital	0	1	2	3	4

PedsQLTM
Pediatric Quality of Life
Inventory

Version 4.0
TEEN REPORT (ages 13-18)

DIRECTIONS

On the following page is a list of things that might be a problem for you.

Please tell us **how much of a problem** each one has been for you
during the **past ONE month** by circling:

- 0** if it is **never** a problem
- 1** if it is **almost never** a problem
- 2** if it is **sometimes** a problem
- 3** if it is **often** a problem
- 4** if it is **almost always** a problem

There are no right or wrong answers.
If you do not understand a question, please ask for help.

*In the past **ONE month**, how much of a **problem** has this been for you ...*

ABOUT MY HEALTH AND ACTIVITIES (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. It is hard for me to walk more than one block	0	1	2	3	4
2. It is hard for me to run	0	1	2	3	4
3. It is hard for me to do sports activity or exercise	0	1	2	3	4
4. It is hard for me to lift something heavy	0	1	2	3	4
5. It is hard for me to take a bath or shower by myself	0	1	2	3	4
6. It is hard for me to do chores around the house	0	1	2	3	4
7. I hurt or ache	0	1	2	3	4
8. I have low energy	0	1	2	3	4

ABOUT MY FEELINGS (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. I feel afraid or scared	0	1	2	3	4
2. I feel sad or blue	0	1	2	3	4
3. I feel angry	0	1	2	3	4
4. I have trouble sleeping	0	1	2	3	4
5. I worry about what will happen to me	0	1	2	3	4
How I GET ALONG WITH OTHERS (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. I have trouble getting along with other teens	0	1	2	3	4
2. Other teens do not want to be my friend	0	1	2	3	4
3. Other teens tease me	0	1	2	3	4
4. I cannot do things that other teens my age can do	0	1	2	3	4
5. It is hard to keep up with my peers	0	1	2	3	4
ABOUT SCHOOL (problems with...)	Never	Almost Never	Sometimes	Often	Almost Always
1. It is hard to pay attention in class	0	1	2	3	4
2. I forget things	0	1	2	3	4
3. I have trouble keeping up with my schoolwork	0	1	2	3	4
4. I miss school because of not feeling well	0	1	2	3	4
5. I miss school to go to the doctor or hospital	0	1	2	3	4

Appendix F



Case# _____

Understanding the Impact of Asthma in Academic Achievement, School Attendance, and in the Quality of Life in Middle school aged children Questionnaire Using The NAEPP, 2007 guidelines

The next series of questions will ask about your child's severity of asthma, it is important that everyone give us accurate answers. The team members will not share or discuss any personal information without your permission. Only the other team members will be able to see your answers to questions or your name. Everything is kept private and strictly confidential. None of your answers will in any way affect your medical care, benefits, any services you may be receiving (such as Medicaid or WIC) or your job or immigration status. You can decide at any point not to participate in the study, and your decision won't have any impact on your current or future medical care. If you have any questions, please let me know. If not, we can start.

The next series of questions will ask about child's asthma over the past 2-4 weeks. Please listen to all the possible responses and then pick the one that best describes the child situation. You must pick the single best answer that describes the child's situation over the prior 2-4 weeks.

So think about the last 2-4 weeks....

1...how often during the day did _____ have asthma symptoms?

5-11 years			
	Severity		Control
a	<2d/wk	a	< 2d/wk but not > 1x/d
b	>2d/wk but not daily	b	>2d/wk or many times on < 2d/wk
c	Daily		
d	Throughout the day	c	Throughout the day

> 12 years			
	Severity		Control
a	<2d/wk	a	< 2d/wk but not > 1x/d
b	>2d/wk but not daily	b	>2d/wk or many times on < 2d/wk
c	Daily		
d	Throughout the day	c	Throughout the day

2...how often during the night did _____ awake due to asthma symptoms?

5-11 years			
	Severity		Control
a	<2x/month	a	0-1x/month
b	3-4 x/month	b	>2x/month
c	>1x/wk but not nightly	c	>2x/wk
d	Often 7x/wk		

> 12 years			
	Severity		Control
a	<2x/month	a	< 2x/month
b	3-4 x/month	b	1-3x/wk
c	>1x/wk but not nightly	c	>4x/wk
d	Often 7x/wk		

3...how often during the night did _____ use albuterol, quick relief medicines, for asthma symptoms? (please do not include albuterol before exercise or heavy play to avoid wheezing due to exercise).

5-11 years			
	Severity		Control
a	<2d/wk	a	< 2d/wk
b	>2d/wk but not daily	b	>2d/wk
c	Daily		
d	several x/d	c	several x/d

≥ 12 years			
	Severity		Control
a	<2d/wk	a	< 2d/wk
b	>2d/wk but not daily	b	>2d/wk
c	Daily		
d	Several x/d	c	Throughout the day

4...how often did asthma interfere with the childs normal activity.

5-11 years			
	Severity		Control
a	None	a	none
b	minor limitation	b	some limitation

c	some limitation		
d	extremely limited	c	extremely limited

<u>≥ 12 years</u>			
	Severity		Control
a	None	a	none
b	minor limitation	b	some limitation
c	some limitation		
d	extremely limited	c	extremely limited

5...Now I need to know how many separate times child took steroids by mouth over the last year to treat an asthma attack. A steroid by mouth is a pill or syrup that is taken for a short period of time to treat asthma attacks.

<u>5-11 years</u>			
	Severity		Control
a	0-1/last year	a	0-1/last year
b	<u>>2x</u> last year	b	<u>>2x</u> last year

<u>≥12 years</u>			
	Severity		Control
a	0-1/last year	a	0-1/last year
b	<u>>2x</u> last year	b	<u>>2x</u> last year

Appendix G



Case# _____

Understanding the Impact of Asthma in Academic Achievement, School Attendance, and in the Quality of Life in Middle school aged children

The American Lung Association recommends everyone 12 years of age and older with asthma take the Asthma Control Test, no matter how well controlled you think your asthma is. Your answers to this 5-question quiz will provide you a score that may help you and your doctor determine if your treatment plan is working or if it might be time for a change.

How to take the Asthma Control Test

Step 1. Write the number of each answer in the score box provided.

Step 2. Add up each score box for your total.

Step 3. Take the test to your doctor to talk about your total score.

1. In the past 4 weeks, how much of the time did your asthma keep you from getting as much done at work, school or at home?

all the time 1	most of the time 2	some of the time 3	a little of the time 4	None of the time 5	<input type="text"/>
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2. During the past 4 weeks, how often have you had shortness of breath?

More than once a day 1	Once a day 2	3-5 times a week 3	Once or twice a week 4	Not at all 5	<input type="text"/>
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3. During the past 4 weeks, how often did your asthma symptoms (wheezing, coughing, shortness of breath, chest tightness or pain) wake you up at night or earlier than usual in the morning?

4 or more nights a week 1	2-3 nights a week 2	once a week 3	once or twice 4	Not at all 5	<input type="text"/>
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4. During the past 4 weeks, how often have you used your rescue inhaler or nebulizer medication (such as albuterol)?

3 or more times per day 1	1-2 times per day 2	2-3 times per week 3	once a week or less 4	Not at all 5	<input type="text"/>
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5. How would you rate your asthma control during the past 4 weeks?

not controlled at all 1	poorly controlled 2	somewhat controlled 3	well controlled 4	completely controlled 5	<input type="text"/>
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Appendix H
Conversation Guide with Participants

Thank you for completing the questionnaires, would you please provide your two best phone numbers so that we may contact you and your best contact mailing address. I have also provided you with an addressed and stamped envelope for you to mail your child's report card to me. We will send you a \$25.00 gift card from Target when we receive your child's report card and we will return you child's report card once we have abstracted the information we need.

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