

Assessing Asthma and Wheezing Related School and Parental Work Absences

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Introduction

- Asthma is a leading cause of school and work absence.

Introduction

- The total cost of asthma to the US economy is estimated at \$10.7-12.7 billion dollars (Weiss 2000, Weiss 2001).
- Indirect cost (\$4.6 billion) includes school days missed by children and the lost work time of parents

Introduction

Asthma-related school absences are estimated using the current NHIS questions:

- 1) Has a doctor or health professional ever told you that (name of parent's child) had asthma?
YES, NO
- 2) During the past 12 months, that is, since {12-month reference date}, about how many days did (name of parent's child) miss school because of illness or injury?

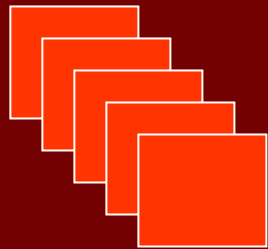
Introduction

- However, the methods used for measuring the impact of asthma on school and work attendance have not been rigorously validated.

Objectives

- 1) to prospectively measure school absences and parental work loss due to diagnosed asthma and undiagnosed wheezing in adolescents
- 2) to evaluate the reliability of reporting asthma-related school absences
- 3) to evaluate demographic factors (gender, SES, race/ethnicity) related to asthma school absences

Design



Schools 1-6

Track asthma absences in children with asthma and/or wheeze with modified school data collection system



January 2002

June 2003



Schools 7,8

Conduct parental telephone interviews on asthma absences and related work loss



Methods

- Develop system of data collection with school administration and county health department school nurses
- Screen all students in 8 schools for wheezing and asthma using the ISAAC survey (International Survey of Asthma and Allergies in Childhood)
- Implement data collection system, track absences in study cohort
- Evaluated data collection system



Methods

- The first data collection method developed by our work group was:

- 1) for teachers to modify the attendance cards in homeroom and mark with a "@", if absence was due to asthma (if stated in excused note from parent) and have our study data manager record this information from cards on a weekly basis,

Methods

- Key people in Modified school attendance data collection system

1) Parents,

writing an absence notes, and noting that absence was related to asthma

2) School Staff recording absence notes

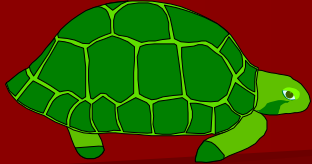
– Homeroom teachers

who mark the attendance cards with an @

→SIMS managers



PARENT NOTE FOR STUDENT WITH POSSIBLE BREATHING PROBLEMS/WHEEZING/ASTHMA



Please return this form to your child's homeroom teacher on the day he/she returns to school.

_____ was absent from
(Name: First, Last)

_____ to _____
(Month/Day/yr) (Month/Day/Yr)

He/she was absent due to breathing problems (wheezing or asthma) for (Check one)

1 day, 2 days, 3 days, 4 or more days OR

He/she was absent for other reasons
_____(describe)

Our Cohort



Results

Asthma/Wheezing Cohort

3,500	screened in 8 schools
628	identified with current asthma or wheezing(18%)
44	withdrawals (moved, didn't want to continue, or "my child doesn't have asthma")
584	study subjects in 8 schools

Demographics of Cohort, n=584

- Age
 - 27% 11 yrs old
 - 48% 12
 - 21% 13
 - 2% 14
- Gender, 57% female
- Race,
 - 80% white,
 - 9% African-American, 5% more than one race
 - 12% Mexican-American born in US
- Socioeconomic Status (SES)
 - 34% low SES (enrolled in free school-lunch program)
- Current smoker, 9%

Results

- Number of parental reported asthma absences
 - N=180, 4.9% of excused absences
 - Turtle notes, n=88
 - Not good enough for a gold standard!

2nd Data collection method

- The 2nd data collection method developed by our work group, after our site visit October 15, 2002, was

TELEPHONE CALLS!



- Study manager randomly selected absences in the study cohort and called a parent within two weeks of absence to ask if it was an asthma related-absence

Results of phone calls

Phone calls to parents of students with diagnosed asthma (n=132),

- 758+ phone calls made from November-May 2003
- In 14% of phone calls made, asthma absences were reported, 49% said not asthma, 35% not reachable
- In 4% of phone calls, parents reported work days missed due to child's asthma
- 24% of calls were to children with what were later classified as unexcused absences

Comparison of parental notes and phone calls

- 38% (295) of phone calls who said absences was not asthma related did not report asthma in parental note.
- In 9.5% (72) of calls, parent said absence was asthma related, but did not report in parental note.
- In 22% (167) of calls, not able to reach parent, parent did not write an excuse note

Additional data collection pieces

- 1) SIMS system-total # of excused, unexcused absences, tardies, suspensions
- 2) nurse phone interviews with parents after an asthma related absence
- 3) final end of year 2003 survey of study cohort students
- 4) mailed home questionnaire with NHIS questions to parents of children with diagnosed asthma

Results

- SIMS –data, Number of absences in 2002-2003 school year in 8 schools
 - Excused n=3,682
 - Unexcused n=1,913
 - Suspensions n= 399

Results-for 01-02 and 02-03 school years combine

SIMS system outcomes-

- types of absence (excused, unexcused, tardies)
- Proportion of school days with an excused absence
- Absence episodes per person-school-day at risk
 - Episode= absences separated by a 3 day break between absence days



Formulas

- Proportion of school days with an absence

$$= \frac{\text{\# of excused days}}{180 \text{ days} - \text{\# of days suspended}}$$

- Absence episode rate

$$= \frac{\text{\# of absence episodes}}{\text{Person school days at risk}(180) - \text{suspensions} - \text{total \# of days absent in episode} + \text{\# of episodes} - 3 * \text{\# of episodes}}$$

Results-Excused Absences

	Diagnosed	Wheezers	Well
Excused Absence Days (CI)	3.8%	3.3%	3.0%
Excused Absence Episodes (IR)	3.0	2.7	2.4

3.8% of the total school days (6.6 absence days/180 school days) were excused absence days for diagnosed asthmatics

Results-Unexcused Absences

	Diagnosed	Wheezers	Well
Unexcused Absence Days (CI)	1.9%	1.8%	1.3%

Unexcused Absence Episodes (IR)	1.6	1.5	1.1
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1.5 absence episodes per 100 school days at risk,
or 2.7 absence episodes per school year

Results-All Absences

	Diagnosed	Wheezers	Well
All Absence Days (CI)	5.8%	5.1%	4.4%
All Absence Episodes (IR)	5.0	4.6	3.8

Wheezers experience 9.1 absence days in a school year vs. 7.3 for "well" adolescents

Effect of Wheezing Severity

Excused Absences

Frequent	3.9%
Non-Frequent	3.3%
Severe Attack	3.8%
No Severe Attack	3.6%

Results-Tardies

	Diagnosed	Wheezers	Well
Excused Tardies (CI)	0.7%	0.5%	0.6%
Unexcused Tardies (CI)	1.8%	1.7%	1.4%
All Tardies (CI)	2.5%	2.2%	2.1%

Statistical Analyses

- Analysis of Variance (ANOVAs)
 - All ANOVAS except tardies had p values less than 0.05

- Non Parametric tests (Tukey, Duncan, Scheffe's)

Excused days	DCA, UCW vs. Random
Excused episodes	DCA, UCW vs. Random
Unexcused days	DCA, UCW vs. Random
Unexcused episodes	DCA, UCW vs. Random
All days	DCA vs. UCW vs. Random (all except tukey, scheffe which were DCA, UCW vs. Random)
All episodes	DCA, UCW vs. Random

Excused, unexcused, all tardies No differences among 3 groups



Nurses Surveys, n=21

- Primarily mothers answering, 85% of students had asthma related absences.
- 66% went to doctors office, 27% didn't do
 - of those that attended Erwin, 54% used Erwin school health center, 8 respondents out of 8 said they used other resources less, and 7/9 said they missed less work because of health center
- 50% said they had an asthma action plan
 - 8/14 said they use the asthma action plan
 - 42% said asthma action plan was available at school
- 55% said doc had given peak flow meter
 - 11/15 said they still use peak flow meter

Nurses Surveys, n=21

- 1/2 of children on anti-inflammatory medication
- 62% of parents missed work when child was sick
- 38% missed 1 or more days of work
- 45% reported that some or most of time in past two week the child's asthma made it difficult to keep mind on work
- 75% reported that their partner did not miss work when their child was absent

Nurses survey, n=21

- 75% of the children in nurses survey were diagnosed asthmatics
- 25% undiagnosed wheezers
- 64% reported having a severe wheezing attack in last year



Strengths and Limitations

■ Limitations

- Lack of parental report via absence notes
 - Our original gold standard did not work,
 - Replaced by telephone calls, more labor intensive
- Low number (n=21) of interviews on work loss

■ Strengths

- Population based sample
- Prospective data collected on children with undiagnosed wheeze,
- Multiple types of questionnaires
- Specific for asthma related absence, not just total absences

Still to do: Reliability, Validity?

- Agreement between parent and child
- Agreement between recall and prospective collection

Conclusions

- Children with diagnosed asthma or wheezing miss more school than well children
- The absolute differences in absenteeism are small but in expected direction
- The challenge was dealing with lack of parental reporting
- Having wide range of severity, with a large number of children with mild symptoms, would explain why there were less asthma related absences in this population than expected. Also, perhaps this age group does not miss as much school as younger children
- Certain subgroups of the population are more likely to have more asthma related school absences- Native Americans, Latinos, current smokers, and those with lower socioeconomic status