



Revenue Lost to California Schools Because of Asthma-Related Absences

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October 29, 2012
APHA





Presenter Disclosures

Meredith Milet

(1) The following personal financial relationships with commercial interests relevant to this presentation existed during the past 12 months:


No relationships to disclose

Conclusion


- 1.4 million asthma absences
- \$37 million school revenue lost

(2009)




Background on Asthma

- Asthma is a chronic disease that inflames and narrows the airways
- Symptoms: wheezing, chest tightness, shortness of breath, coughing
- One of the most common chronic diseases in the US
- Impacts:
 - Missed school and work days
 - Disruption of sleep and daily activities
 - Urgent medical visits for exacerbations
 - Death



Background on Asthma


- Exact causes of most cases of new onset asthma are not known
- Some identified causes:
 - Family history
 - Certain respiratory infections in childhood
 - Exposure to tobacco smoke, dust mites, cockroaches, cat dander
 - Over 400 substances identified that can cause asthma, most in occupational settings



Background on Asthma


- Some things that can trigger asthma exacerbations in someone with asthma (triggers):

Air pollution	Dust mites
Mold	Stress
Viral infections	Weather
Exercise	Animal dander
Odors	Wood smoke
Cockroaches	Pollen
Tobacco smoke	Certain medications
Menstrual cycles	




Background on Asthma

- Asthma cannot be cured, but can be managed to have a minimal effect on people's lives, through:
 - Access to medical care
 - Appropriate medications
 - Proper self-management
 - Trigger reduction
- Appropriate care includes:
 - Assessing severity and control and using appropriate therapy
 - Monitoring and/or adjusting therapy at follow-up care
 - Developing and using an asthma action plan
 - Patient education
 - Plans for trigger reduction
 - Treating co-morbid conditions




Background on Asthma

- Asthma Action Plan
 - Outlines zones (green, yellow, red) for the patient based on symptoms and peak flow
 - Outlines appropriate medication and steps to take when in each zone
 - The provider and patient track symptoms, triggers, etc. and re-adjust over time



Background

- Asthma is a major public health issue among school-aged children in California
- Asthma is manageable
- School-based asthma management and trigger reduction programs can help students and staff
- Advocates need fiscal arguments for implementing these programs


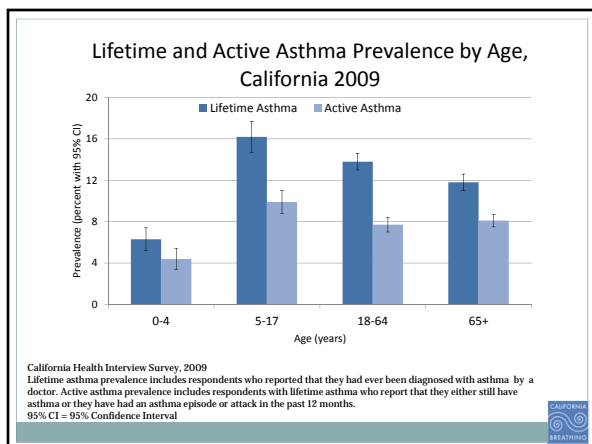


Asthma Among School-Aged Children in California

- An estimated 1.1 million children age 5-17 in California have been diagnosed with asthma (16% or 1 in 6) [California Health Interview Survey, 2009]
- About 700,000 have current asthma (10% or 1 in 10) [California Health Interview Survey, 2009]
 - *Current asthma includes respondents who have been diagnosed with asthma and report that they still have asthma.
- Among children age 5-17 in California, 2010:
 - Over 42,000 asthma emergency department visits
 - Over 4,800 asthma hospitalizations
 - Ten asthma deaths

[California Office of Statewide Health Planning and Development, 2010 for hospital and ED data; California Department of Public Health, Office of Health Information and Research, 2010 for death data.]

*Asthma ED visits and hospitalizations are identified by primary diagnosis of ICD-9CM code 493. Counts are the number of visits, not the number of unique individuals. Deaths are identified by underlying cause of death of ICD10 code J45 or J46.

Asthma Among Children (Age 0-17) in California

- 24% of children with current asthma have not had a routine asthma checkup in the past year
- 44% of children with current asthma have never been given an asthma action plan


[Behavioral Risk Factor Surveillance System (BRFSS), Asthma-Call Back Survey, 2006-2008]

*Note: Here, current asthma includes respondents who have been diagnosed with asthma and report that they still have asthma.

- 5% of children with active asthma are exposed to secondhand smoke (SHS) in the home

[California Health Interview Survey, 2009]



*See definition of active asthma on previous slide.



Asthma Among School-Aged Children in California


Among Children in California:

- Asthma prevalence is **1.6 times higher for African-Americans** compared to Whites
- Rates of asthma emergency department visits and hospitalizations are **5 times higher for African-Americans** compared to Whites

The Question:


How much revenue is lost to California schools due to asthma absences?



Research Question

- Asthma stakeholders in California are *very* interested in knowing how much revenue loss is associated with asthma school absences
- We have an estimate of asthma absences from a statewide survey (no other source)
- The department of education knows how much revenue is associated with each student-day

asthma absences x revenue per student-day = \$ lost




School Revenue

Average Daily Attendance (ADA) – the total number of days of student attendance divided by the total number of days in the school year. A student attending every school day would equal one ADA. Generally, ADA is lower than enrollment. A school district's revenue limit income is based on its ADA.

Revenue Limit – is the district-specific amount of taxes a school district receives per pupil ADA for general education. Other aid might be granted in addition to revenue limit, but only revenue limit is affected by ADA.

ADA is multiplied by the district's revenue limit to determine the actual appropriation the district receives.




Revised Equation

Put Asthma Absences into ADA units:

(# asthma absences/ # days taught) x revenue limit per ADA = \$ lost


But, funding is determined after the second reporting period (in April). This means that absences after that reporting period don't have any effect on funding. To be conservative:

**(# asthma absences/ # days taught)
x revenue limit per ADA
x % of absences that 'count'
= \$ lost**



Variables Needed


- 1) Number of asthma absences
- 2) Number of days taught per year
- 3) Revenue limit per ADA
- 4) Percent of days included in ADA calculation





The largest health survey conducted in any state

- UCLA Center for Health Policy Research
- Statewide telephone survey
- Over 50,000 households
- Adults, teens, children
- Administered in 5 languages





Children age 0-11 have an adult proxy answer the survey:
Has a doctor ever told you that (CHILD) has asthma?

During the past 12 months, how many days of day care or school did (CHILD) miss due to asthma?


Adolescents age 12-17 self-report:
Has a doctor ever told you or your parents that you have asthma?

During the past 12 months, how many days of school did you miss due to asthma?




CHIS Sample and Methods

- Age 5-17
- Attending public school
- Final N=7,238
- Weighted to CA population
- Use SAS surveymeans and surveyfreq procedures




Number of Days Taught per Year

- Ranges across the state from 175-180
- Used average of 177.5 days




School Revenue Data

- Base revenue limit by district provided by CA Department of Education
- 2008-2009 School Year (most overlap with 2009 survey months)
- To get overall average for CA, we weighted the district data by enrollment
- Weighted average revenue limit per ADA was \$6,123




Percent of Days to Include

- We don't know when absences occurred
- Estimated the number of asthma absences that might occur Sept-April from the proportion of asthma ED visits that occur by month over the school year among 5-17 year olds (using statewide ED data)
- Ran various scenarios with differing school year lengths and cutoffs for ADA reporting periods
- Best estimate – include 78.6% of absences in revenue loss calculations



Results


- In 2009, there were an estimated 1.4 million public school absences due to asthma in CA
- These absences correspond to an estimated \$37 million in school revenue losses



Results

- A small percentage of students account for a large percentage of absences/revenue losses

Number of asthma absences	% Among Students with Asthma	% of Absences/Revenue Lost
0	78.4%	0%
1-4	13.7%	23.8%
5-10	5.0%	22.8%
11+	2.9%	53.4%




Results

- Analysis of the 11+ absence group shows:
 - Significant difference in age (see next slide)
 - Significant difference in asthma measures (see following slides)
 - No significant difference in:
 - Sex
 - Race/ethnicity
 - %FPL
 - Insurance (Y/N and type of insurance)
 - Urban/Rural residence
 - Parents are single or married

*Note: Other studies have shown associations between asthma absences and race/ethnicity and income measures.


[California Health Interview Survey, 2009]



Results

- Elementary school students are more likely to miss school due to asthma compared to middle and high school students
 - Average 2.4 for elementary vs. 0.6 for middle/high (p<0.001)
 - 73% of all asthma absences were among elementary students


[California Health Interview Survey, 2009]



Results


	Missed 0-10 days	Missed 11+ days
Had any asthma symptoms in the past year*	67.3%	100%
Taking daily prescription medication to control asthma*	20.4%	86.8%
ER/urgent care visit for asthma in the past year*	6.1%	28.3%
Very confident they can manage asthma†	77.2%	52.6%

*p<0.001
†p<0.05
[California Health Interview Survey, 2009]



Discussion

- Many students miss school days due to their asthma
- This is burdensome for the children & their families, and reduces revenues for schools
- A small proportion of students accrue a large proportion of absences



Limitations to CHIS Data

- Survey data are self-reported (or reported by proxy) and subject to recall and social desirability bias
- Low response rates may affect generalizability
- Not representative of those not speaking the 5 given languages
- UCLA determines school type via the Internet, based on the name of the school given by the respondent and the respondent's location



Discussion

- There are many limitations to these data
- We need a more precise system for counting asthma-related absences
- National literature demonstrates that children with asthma miss more school than their peers, but it is unclear how much more and what factors have the biggest impact on these absences. This analysis did not compare the magnitude of absences among children with asthma compared to those without asthma (the data are not available in CHIS).




Thank You!

Acknowledgements:

Scott Kessler
California Breathing
UCLA Center for Health Policy Research
California Department of Education

