

Asthma rate and costs from traffic-related air pollution are much higher than once believed

January 26 2012

A research team led by University of Massachusetts Amherst resource economist Sylvia Brandt, with colleagues in California and Switzerland, have revised the cost burden sharply upward for childhood asthma and for the first time include the number of cases attributable to air pollution, in a study released this week in the early online version of the *European Respiratory Journal*.

The total cost of asthma due to pollution is much higher than past traditional [risk assessments](#) have indicated and there is growing evidence that exposure to traffic-related air pollution is a cause of asthma and a trigger for attacks, so it should be included, say the authors. They conducted the study in Long Beach and Riverside, Calif., communities with high regional [air pollution levels](#) and large roads near residential neighborhoods.

Total additional asthma-specific costs there due to traffic-related pollution is about \$18 million per year, almost half of which is due to new asthma cases caused by pollution, they report. Brandt worked with researchers at the University of Basel, Switzerland, Sonoma Technology, Inc. and the University of Southern California.

Using updated techniques that count asthma cases attributable to air pollution for the first time and including a broader range of health care costs such as parents' missed work days, extra doctor visits and travel

time along with prescriptions, the researchers found that a single episode of bronchitic symptoms cost an average \$972 in Riverside and \$915 in Long Beach. Bronchitic symptoms (daily cough, congestion or phlegm, or bronchitis for three months in a row) are a critical outcome for children with asthma.

Further, people who live in cities with high traffic-related air pollution bear a higher burden of these costs than those in less polluted areas, they say.

Brandt and colleagues say the total annual cost for a typical asthma case was \$3,819 in Long Beach and \$4,063 in Riverside, and "the largest share of the cost of an asthma case was the indirect cost of asthma-related school absences." School absences are an important economic consequence, they add, because "they often lead to parents or caregivers missing work."

Overall, Brandt points out that the results are relevant and applicable to many settings and "families with children who have asthma are bearing a high cost. The total annual estimate between \$3,800 and \$4,000 represents 7 percent of median household income in our study in these two communities. This is troublesome because that is higher than the 5 percent considered to be a bearable or sustainable level of [health care costs](#) for a family."

Riverside and Long Beach account for about 7 percent of the total population of California, the authors say, which suggests that state-wide costs of asthma related to air pollution are "truly substantial."

For this work, Brandt and colleagues analyzed several surveys on health care visits by children with asthma and their previous estimates of the number of asthma cases attributable to pollution to estimate the annual costs of [childhood asthma](#). They also estimated the cost of asthma

exacerbation due to regional air pollutants. They feel the new method does a better job of accounting for the full impact of traffic-related pollution and will be widely applicable in urban areas.

She points out, "Traditional risk assessment methods for air pollution have underestimated both the overall burden of [asthma](#) and the cost of the disease associated with [air pollution](#). Our findings suggest the cost has been substantially underestimated and steps must be taken to reduce the burden of traffic-related pollution."

Provided by University of Massachusetts at Amherst

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