October 2006

secondhand smoke may be a trigger that increases the severity of asthma attacks in those with asthma and could also be associated with new-onset asthma in previously non-asthmatic adults.

These recent studies strengthen the correlation between secondhand smoke and adult asthma noted in reports by the Surgeon General and the Institute of Medicine (IOM). Both reports concluded that there was “limited” evidence of a causal relationship between cigarette smoke and adult asthma.1,2 However, these reports were based largely on studies published through 2001. In the following sections, we summarize two of the recent articles on secondhand smoke and adult asthma.

Secondhand Smoke and Adults with Asthma3

The impact of secondhand smoke on adults with asthma was investigated by Eisner et al. The researchers recruited non-smoking individuals with asthma through a group of randomly selected physicians in Northern California. The subjects were interviewed to obtain baseline data, and follow-up interviews were conducted 18 months later. Follow-up interviews were completed by 349 subjects (87% response rate). The interviews assessed the subjects’ socioeconomic status, asthma history, and health status, as well as exposure to secondhand smoke in the home, workplace, car, and other locations. Symptoms associated with secondhand smoke exposures were also evaluated. Interview data were analyzed and controlled for variables such as age, sex, income, and education level.

The results of the study showed that exposure to secondhand smoke, as identified during the baseline interview, was associated with impaired health at the 18 month follow up. Individuals who reported secondhand smoke exposure were more likely to visit the emergency room (odds ratio = 3.4; CI=1.1, 10.3) and be hospitalized for asthma-related problems (odds ratio = 12.2; CI=1.5, 102). They also experienced more severe asthma flares, poorer overall physical health, and lower asthma specific quality of life than those who were not exposed to secondhand smoke. The author cites previous studies

that have shown links between secondhand smoke exposure and increased medication use and lower pulmonary function. This study provides additional prospective evidence that exposure to secondhand smoke is associated with poorer asthma health outcomes.

Secondhand Smoke and Adult Onset Asthma

Jaakkola et al conducted a large population-based study to examine the impact of secondhand smoke on new-onset asthma. This study identified newly-diagnosed asthma in the working-age population (21-63 years old) during a 2.5 year period (1997-2000) in a district of South Finland. Individuals with a history of asthma, and those who were past and present smokers were eliminated from the study, resulting in a sample population of 239 patients with new-onset asthma. A control population of 487 participants was recruited by using census data of the district’s population and excluding persons with a history of asthma or smoking.

A self-administered questionnaire queried subjects about their exposure to secondhand smoke both in the previous 12 months, and throughout their lifetime. The questionnaire also collected demographic and health information, active smoking history, occupation and work environment characteristics, as well as dietary information.

The relationship between exposure to secondhand smoke and adult-onset asthma was evaluated. The analysis controlled for other exposures related to asthma, including mold in the home or workplace, history of pets in the home, and dust, fumes, or sensitizers in the workplace. The results of the study showed that the risk of developing asthma as an adult was significantly related to total exposure to secondhand smoke during the past year (odds ratio = 1.97; CI=1.19, 3.25). Asthma was also significantly related to workplace secondhand smoke exposure (odds ratio = 2.16; CI=1.26, 3.72). The fraction of asthma attributable to total secondhand smoke exposure during the previous year was 49.2% (CI=16.0, 69.2) among exposed individuals. Eight percent (8%) of all new asthma cases in the previous year in the working age population were attributable to secondhand smoke. A statistically significant exposure-response relation was not observed; however, cumulative work exposure appeared to have a stronger effect than home exposure.

19 Year-Old Waitress Died from Asthma Attack

The Michigan Fatality Assessment and Control Evaluation (MIFACE) program investigated the 2004 death of a 19-year-old waitress who suffered a fatal asthma attack in a bar where smoking was permitted. She died less than 50 minutes after arriving for work. She had left her inhaler at home, and collapsed while attempting to leave the building to get fresh air. Emergency response was delayed because the bar did not have an emergency response plan and the bar manager called the owner before calling 911.

In response to the growing evidence about the hazards of secondhand smoke, a number of government agencies, including MDPH and the EPA have advocated for protection against smoking in the workplace. Nongovernmental organizations have also promoted protection against secondhand smoke. The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) wrote that no engineering solutions can be relied upon to control health risks from secondhand smoke in spaces where smoking occurs. The American Lung Association stated, “for adult nonsmokers, the workplace is the primary source of secondhand smoke exposure...Levels of secondhand smoke in restaurants and bars are approximately 1.6 times greater and 7.6 times greater, respectively, than office workplaces. Food service workers have a 50% greater risk of dying from lung cancer than the general population”. Gilmour et al summarized recent evidence and concluded that “ETS is related to an increased risk of adult-onset asthma.”

In July 2004, Massachusetts became one of nine states that banned smoking in all enclosed work-places.

For more information about the smoke-free workplace law, or to report violations, call the Massachusetts Tobacco Control Program at 1-800-992-1895.

Health care providers play an important role in encouraging asthmatic patients to avoid secondhand smoke. Compliance with MA law prohibiting smoking in the workplace will aide in reducing both the severity of asthma symptoms as well as the prevalence of asthma in adults.

Work-Related Asthma Cases Reported to Massachusetts SENSOR

<table>
<thead>
<tr>
<th>July 2006</th>
<th>August 2006</th>
<th>September 2006</th>
<th>Total (3/92 – 9/06)</th>
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<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1046</td>
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7 American Lung Association, State of Tobacco Control:2005
8 Gilmour MI, Jaakkola MS, London SJ, Nel AE, Rogers CA. How exposure to environmental tobacco smoke, outdoor air pollutants and increased pollen burdens influences the incidence of asthma. Environmental Health Perspectives 2006;114:627-633.