ISDS

Emerging Health Threats Journal 2011, **4**:s152. **doi:** 10.3134/ehtj.10.152

www.eht-journal.org

ABSTRACT

Using chief complaint data to evaluate the effectiveness of a statewide smoking ban

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Objective

The objective of this study, after completion of the preliminary analysis, was to evaluate whether or not the smoke-free law in Ohio has made a positive change in reducing the effects of secondhand smoke exposure by comparing syndromic surveillance data (trends for emergency department, and urgent care chief complaint visits), related to heart attack and/or acute myocardial infarction (AMI) before and after the smoking ban.

Introduction

In November 2006, Ohioans supported a statute that set into law a requirement that all public places, and places of employment in Ohio prohibit smoking.[1] The law took effect in December 2006; however, the rules for implementation were not finalized until June 2007. The primary purpose of the law was to protect employees in all workplaces from exposure to environmental tobacco smoke. When determining how best to evaluate the health impact of a smoke-free law as it relates to secondhand smoke exposure, most studies have reviewed the incidence of heart attacks or AMIs. In the 2006 Surgeon General's Report, 'The Health Consequences of Involuntary Exposure to Tobacco Smoke,'[2] secondhand smoke exposure is causally associated with cardiovascular events, including AMI. The Institute of Medicine also released a report in 2009 from a meta-analysis, 'Secondhand Smoke Exposure and Cardiovascular Effects: Making Sense of the Evidence,'[3] of 11 epidemiologic studies, reviewing the incidence of acute coronary events following the passing of a smoke-free law. Each of the 11 studies showed a decrease in heart attack rates after implementation of smoke-free laws. The purpose of this study was to evaluate this relationship in Ohio.

Methods

Syndromic surveillance data from hospital emergency department and urgent care chief complaints were collected and analyzed from the state of Ohio's EpiCenter system, for 2005–2010. Although these data types are pre-diagnostic in nature, they are more readily accessible than discharge data. Heart attack and AMI were defined rather specifically in the analysis (chief complaints must have included a reference to heart attack/pain/problems or AMI, and excluded common visits solely for cardiac conduction, or volume concerns, or general respiratory problems). These data were combined and analyzed as a total percentage of visits by month, using SAS v 9.2 (SAS Institute Inc., Cary, NC, USA). Data analyses were performed in 87 of Ohio's 88 counties. Franklin County was excluded from analyses as Columbus, Ohio (located within this county) passed its own smoke-free ban before the state ban.

Results

Figure 1 below shows the trends of total percentage of emergency department and urgent care visits related to heart

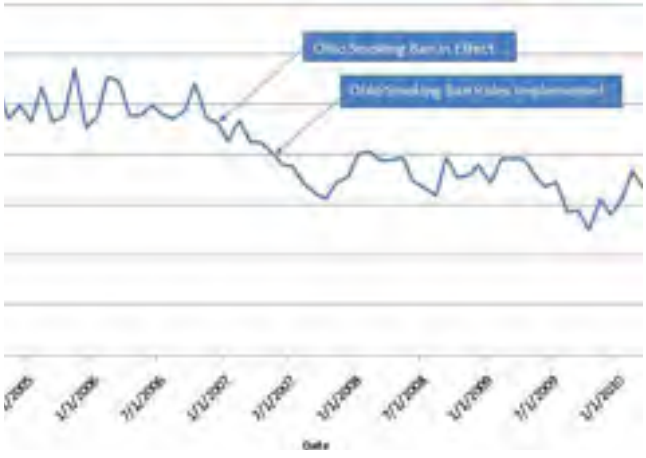

Figure 1 Total Percentage of ED Visits Related to Heart Attack/AMI in All Ohio Counties (excluding Franklin), 2005–2010, by month.

attack/AMI from 2005–2010 for all Ohio counties, excluding Franklin County. When comparing the means pre- and post-smoking ban, the data showed almost a 30% reduction in mean total percentage of visits for heart attack/AMI post-smoking ban.

Conclusions

On the basis of these results, the data suggest since the smoke-free law in Ohio has been passed, a reduction in the harmful effects of secondhand smoke exposure has also been observed by reducing heart attack and AMI, as defined by pre-diagnostic chief complaint data; however, no causal assumptions can be made. Additional analyses should be completed to further evaluate this relationship, and to control for age and gender of the patients. Further, collection of patient diagnosis from the healthcare facilities would provide strength in validating the observed results.

Acknowledgements

This paper was presented as a poster at the 2010 International Society for Disease Surveillance Conference, held in Park City, UT, USA, on 1–2 December 2010.

References

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3 IOM (Institute of Medicine). 2010 *Secondhand Smoke Exposure and Cardiovascular Effects: Making Sense of the Evidence*. The National Academies Press: Washington, DC.