

Work-Aggravated Asthma

There are three ways work may have an adverse effect on asthma: 1) sensitization to a substance at work may cause asthma; 2) acute exposure to a high concentration of an irritant at work may cause asthma (Reactive Airways Dysfunction Syndrome (RADS)); or 3) aggravation of pre-existing asthma.

Aggravation of pre-existing asthma may be the most common effect of work on asthma but is infrequently reported to the Michigan surveillance system. Less than 10% of the reports received in Michigan are for aggravation of pre-existing asthma. This contrasts with the surveillance system in California which is tied into medical reimbursement where 35% of the reported work-related asthma cases are for aggravation of pre-existing asthma (1). Other studies have

also shown that work aggravated asthma is a more significant component of work-related asthma than is reflected in the Michigan surveillance system. A Canadian study reported 50% of asthma claims for worker compensation were for work-aggravated asthma (2). Case series of patients from two occupational medicine clinics, one in the state of Washington and one in Massachusetts, reported respectively that 27% and 19% of work-related asthma was work-aggravated asthma (3,4). Finally, a report from an asthma referral clinic in Ontario showed that 49% of individuals reporting worsening of symptoms at work had work-aggravated asthma (5).

There are an estimated 650,000 adults in Michigan who currently have asthma. The vast majority of these individuals work. Yet the

Table I. Personal Characteristics of Work-Aggravated and New-Onset Asthma Cases

Characteristic	Categories	Work-Aggravated Asthma (n=210)	New-Onset Asthma (n=891)
Demographic Features	Mean Age (SEM)	38.0 (0.68)*	42.0 (0.35)
	Female, %	69%**	53%
	Non-White, %	33%**	22%
	Ever smoke cigarettes, %	39%	53%
History of Allergies	Ever told had allergies	75%**	42%
	Family history of allergies or asthma	57%**	35%

*p < 0.01, by t-test

**p < 0.01, by chi-square

Table II. Consequences Associated with Work-Related Asthma		
	Work-Aggravated Asthma (n=210)	New-Onset Asthma (n=891)
Still have breathing problems	75%	79%
Visit ER for work-related breathing problems	59%	52%
If yes, number of times:		
One	53%	45%
More than one	44%	51%
Data missing	3%	4%
Hospitalized for work-related breathing problems	23%	25%
If yes, number of times:		
One	55%	53%
More than one	27%	35%
Data missing	18%	12%
Applied for workers' compensation	21%*	40%
Percentage with applications decided	57%	47%
Of those with applications decided:		
Awarded	72%	77%
Denied	28%	23%
*p < 0.01, by chi-square		

Michigan surveillance system only receives 10-15 reports per year of work-aggravated asthma. We define work-aggravated asthma as:

- 1) the affected individual experienced asthma symptoms or had treatment for asthma in the two years prior to entering a new work setting; and
- 2) the affected individual experienced an increase in asthma symptoms, increased use in asthma medications, or increased use of medical services (e.g. doctor visits, emergency room visits, hospitalizations).

The two years is arbitrary, but was the time period agreed to by the four states with work-related asthma surveillance systems. The "new work setting" includes not only a new job, but also a change in work process or the introduction of new substance in the work place.

The four states (California, Massachusetts, Michigan and New Jersey) that conduct surveillance for work-related asthma have recently compiled our data on work-aggravated asthma. We compared work-aggravated asthma

cases to cases of asthma caused by work. Table I shows the differences in personal characteristics between the two types of asthma. The work-aggravated asthmatics were younger, more likely to be women, less likely to be white, less likely to have smoked cigarettes, and more likely to have a personal history and a family history of allergies.

Table II shows the consequences of work-related asthma. Individuals with work-aggravated asthma were as likely to continue to have respiratory problems after leaving work, been hospitalized or treated in the emergency room as individuals with new onset work-related asthma. However, individuals with work-aggravated asthma were less likely to apply for workers' compensation although if they did they were as likely to receive compensation as individuals with new-onset work-related asthma (Table II). These results are consistent with Michigan's Worker Compensation Law. Workers are eligible for compensation if work significantly contributed to the cause or aggravated a pre-existing condition. The lower of percentage of workers with work-aggravated asthma applying for

Table III. Cessation of Exposure to Suspected Agent		
	Work-Aggravated Asthma (n=210)	New-Onset Asthma (n=891)
No longer exposed	73%	71%
Reason why no longer exposed:		
Left company:	23%**	47%
Quit on MD advice, workers' comp., disability, sick leave	10%**	24%
Fired	2%*	7%
Left work on own concern	4%	8%
Left company, no reason	6%	8%
Still work in company:	37%*	28%
Reassigned in company	14%	19%
New chemical in use, new ventilation, or new respirator	24%**	8%
*p < 0.05, by chi-square		
**p < 0.01, by chi-square		

compensation suggests a lack of awareness of eligibility for this benefit among patients and/or their physicians.

Table III shows that individuals with work-related asthma are equally likely to no longer be exposed to the substance causing the problem as individuals with new onset asthma. However, individuals with work-related new onset asthma were more likely to have been fired or left the company on the advice of their doctor or be on sick leave while individuals with work-aggravated asthma were still working in the company but controls such as a new respirator, ventilation or chemical were being used. This is consistent with the medical

literature that individuals who become sensitized to a substance at work do better if they are totally removed from exposure.

We encourage you to report all your work-related asthma patients, including those with work-aggravated asthma. See the box on the 4th page of this newsletter for ways to report electronically, by telephone, fax or mail. If you have any diagnostic questions about work-aggravated asthma, feel free to call Ken Rosenman, MD, Professor of Medicine at 1-800-446-7805.

References

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**PS Remember to report all cases of occupational disease!*

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the Reporting of
Known or Suspected
Occupational Diseases**
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FAX (517) 432-3606
Telephone 1-800-446-7805
E-Mail ODRREPORT@ht.msu.edu
Web www.chm.msu.edu/ocm
Mail Michigan Department of
Consumer and Industry Services
Division of Occupational Health
P.O. Box 30649
Lansing, MI 48909-8149
Reporting forms can be obtained by
calling (517) 322-5208
Or
1-800-446-7805

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