

SENSOR

Occupational Lung Disease Bulletin

Massachusetts Department of Public Health

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September 2005

Dear Health Care Provider,

This issue of the Occupational Lung Disease Bulletin focuses on work-related asthma (WRA) in the emergency department (ED). It was written by Dr. Amy Nuernberg, a fellow in occupational and environmental medicine at Harvard School of Public Health on rotation at the Occupational Health Surveillance Program.

Individuals who have WRA often seek care in the ED. Among confirmed cases of WRA reported to MA SENSOR, 50% reported having sought treatment in the ED at least once. Recent MA survey findings suggest that individuals with WRA are much more likely to report treatment in an ED than individuals with asthma unrelated to work.

In 2002, the Massachusetts Division of Health Care Finance and Policy established a statewide database of all ED visits. OHSP is now using this database to identify possible cases of WRA in an effort to broaden identification of sentinel cases beyond usual WRA reporters. Using data from the first two years, OHSP identified 343 ED visits in which the patient had a diagnosis of asthma or asthma symptoms associated with work, or reactive airways dysfunction syndrome (RADS). Each medical record was then reviewed, and the likely WRA cases were selected. Follow-up for case confirmation is ongoing, as is analysis of subsequent years of ED data.

OHSP continues to rely on reporting from occupational medicine, primary care, and pulmonary practitioners for identification of sentinel cases. Remember to report suspected and confirmed cases of WRA to OHSP by phone, fax or mail.

To receive your Bulletin electronically, email: Occupational.asthma@state.ma.us

Sincerely,
Elise Pechter MPH, CIH

Work-Related Asthma in the Emergency Department

Amy Nuernberg, M.D., M.P.H.

Case 1

A 37-year-old female smoker presents to an emergency department (ED) for worsening productive cough, shortness of breath, chest tightness and nasal burning. She reports she has had similar symptoms on and off for the last year. Her peak flow on presentation was 230 lpm (59% predicted). She has worked for one year at a small,

family-owned business that makes cedar and oak chairs. She does inventory work at a desk in the warehouse where the chairs are cut, sanded, and assembled.

She received albuterol and Atrovent by nebulizer with improvement in her symptoms. She was discharged with prescriptions for an albuterol inhaler, antibiotics, and Prednisone. She was counseled to quit smoking and referred to a pulmonologist.

Case 2

A 48-year-old male nonsmoker presents to an ED by ambulance for acute shortness of breath and chest tightness. He inadvertently mixed bleach and hydrochloric acid while cleaning a bathroom in his job as custodian at a country club.

He received two albuterol nebulizer treatments en route to the ED, which improved his symptoms. He received Decadron 8mg IV and further albuterol and lidocaine nebulizer treatments. His shortness of breath resolved, and his lungs were clear prior to discharge. He was given an albuterol inhaler with a spacer and was instructed in their use.

Work-related Asthma in the ED

The two cases above are work-related asthma (WRA) cases identified from Massachusetts ED data. In Case 1, the patient goes to the ED after a year of chronic intermittent symptoms. While this exacerbation may be related to an upper respiratory tract infection, her occupation as an inventory worker in close contact with known sensitizers, cedar and oak wood dust, is pertinent. Exposure to this dust over time can cause new-onset asthma. As in this case, onset of frank asthma may be preceded or accompanied by rhinitis or rhinoconjunctivitis. If no information is provided to this patient regarding WRA, she may return to work, experience escalating symptoms, and receive repeat courses of antibiotics with no improvement.

In Case 2, the patient presents to the ED with classic reactive airways dysfunction syndrome (RADS). This may occur when persons are exposed to high concentrations of irritants such as chlorine (as in this case), or even worse, from the mixture of bleach and ammonia resulting in exposure to chloramines, a potent asthagen. In some cases, symptoms persist for months or years, requiring

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ongoing medical treatment and adjustment of work responsibilities.

In both of these cases, the ED visit was the first medical encounter these workers had for asthma. The ED may be the first point of care for patients with WRA, particularly for patients with worsening symptoms of pre-existing asthma, for patients with RADS, and for patients without health insurance.

Emergency Treatment of Adult Asthma

The ED role in treating asthma is to assess the severity of airflow obstruction and the patient's response to treatment, stabilize patients in acute crisis and refer them for further care.¹ Patients seen in an ED for their asthma are commonly sub-optimally controlled, or they have a particular unavoidable trigger like an upper respiratory infection, or they have not previously been diagnosed with asthma and are unfamiliar with the symptoms. Recognizing possible WRA, however, has particular treatment implications.

Pharmacologic treatments, both acutely and chronically, are largely the same for WRA and usual adult asthma. The main difference in treatment is identifying the specific asthmagen so that exposure can be minimized or stopped. The NHLBI Guidelines call for a brief history to determine "the . . . cause of current exacerbation."¹ This is a particular challenge in any health care setting, perhaps even more so in the ED. In addition, the growing prevalence of asthma and increasing use of the ED for urgent asthma care may lead to complacency on the part of treating physicians, and assumptions about common causes, including seasonal allergens or infections.

While management of usual asthma also involves controlling triggers, cessation of exposure in patients with sensitizer-induced WRA is particularly critical. Early reduction or cessation of exposure clearly improves prognosis. Thus, early action to identify a culprit asthmagen or sensitizer allows employees and employers to initiate specific workplace modifications before permanent damage occurs.

Emergency Department Interventions for WRA

The Occupational Health Surveillance Program (OHSP) has been making efforts to communicate with the emergency medicine community in Massachusetts, providing educational information about WRA. The most important action for emergency and other physicians to take is to ask the patient about links between work and asthma symptoms.

The feasibility of one-on-one patient education (e.g. inhaler and spacer teaching) varies widely among EDs due to variations in staff resources, patient volume, and

other demands on the ED. Possible interventions in the ED setting, however, include the following:

- Ask adult asthma patients about work.
- Communicate with the patients' primary providers and/or asthma physicians.
- Dispense peak flow meters and diaries with instructions for use.
- Provide educational materials on WRA.
- Assist workers in identifying and avoiding triggers at work while medical work-up is ongoing.
- Refer patients to occupational medicine and/or pulmonary consultants.
- Report suspected or confirmed cases to the Massachusetts Department of Public Health. Cases need only have a diagnosis of asthma plus an association with work to be reportable.

Identifying WRA in Outpatient Settings

Asking patients about their work and documenting potential pertinent exposures appears to be frequently lacking in physician encounters with asthmatic patients. In one HMO, a discussion of work exposures in relation to asthma was documented in medical charts in less than one of eight charts. However, in depth review suggested that 21% of the asthma cases were attributable to occupational exposures. None of these cases had been diagnosed as WRA, referred to an occupational medicine consultant, reported to the state's surveillance program, or billed to workers' compensation insurance.^{2,3}

Healthy People 2010 and Asthma

Healthy People 2010 promotes goals for respiratory health through better prevention, detection, treatment, and education.⁴ There are nine asthma-specific objectives. Particularly pertinent to WRA are objectives to reduce ED visits, missed work days, functional limitations, and to increase patient education. Every encounter with a possible WRA case is an opportunity for gathering information on work exposures, optimizing treatment, and providing education whether the encounter occurs in the primary care setting, a specialist's office, or in the ED.

Work-Related Asthma Cases Reported to Massachusetts SENSOR

| June 2005 | July 2005 | August 2005 | Total (3/92 – 8/05) |
|-----------|-----------|-------------|---------------------|
| 2 | 2 | 0 | 1024 |

² Milton DK, et al. 1998. Risk and incidence of asthma attributable to occupational exposures among HMO members. *AJIM* 33:1-10.

³ Sama SR, et al. 2003. A longitudinal study of adult-onset asthma incidence among HMO members. *Env Health* 2:10-18

⁴ US Dept Health and Human Services. 2000. Healthy People 2010: National Health Promotion and Disease Prevention Objectives. Vol 2 www.healthypeople.gov

¹ NHLBI, National Institutes of Health, 1997. Guidelines for the Diagnosis and Management of Asthma www.nhlbi.nih.gov/guidelines/asthma/asthgdln.pdf

Remember, work-related asthma cases may be reported to SENSOR by phone, fax, or mail!