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Occupational Asthma or Work-Related Exacerbation of Asthma

Abstract

[Excerpt] Occupational asthma is asthma due to work exposures. It can be caused by a specific workplace agent with a specific immune system response – the agent is called a sensitizer. It has been recommended that whenever an adult experiences new-onset asthma, occupational asthma should be suspected. The respiratory symptoms of occupational asthma include wheezing, shortness of breath, chest tightness, cough, and sputum production. While these are similar to asthma that is not work-related, these symptoms occur due to a work-related exposure.

Keywords

occupational asthma, work-related exposures, immune system

Comments

Required Publisher Statement

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Recommended Citation

Brown, N.J. (2019). *Occupational asthma or work-related exacerbation of asthma* [Electronic version]. Ithaca, NY: Cornell University, Workplace Health and Safety Program.

Occupational asthma or work-related exacerbation of asthma

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January 31, 2019

Occupational asthma is asthma due to work exposures. It can be caused by a specific workplace agent with a specific immune system response – the agent is called a sensitizer. It has been recommended that whenever an adult experiences new-onset asthma, occupational asthma should be suspected. The respiratory symptoms of occupational asthma include wheezing, shortness of breath, chest tightness, cough, and sputum production. While these are similar to asthma that is not work-related, these symptoms occur due to a work-related exposure.

How much exposure to a sensitizer is needed for a person to experience asthma symptoms?

This can vary a great deal, both as to the amount of allergen needing to be inhaled to trigger the asthmatic attack or the amount of time the person has been doing the job with that exposure. For some sensitizers and workers, the symptoms may occur quickly upon the person's first exposures to the sensitizer. For some exposures, symptoms may not appear until after a latency period – this time period could range from weeks to years after the first exposure. For example, 30 years' exposure to flour may be needed for a baker to develop asthma. While the symptoms occur due to exposure at the job, symptoms may appear at the beginning of the work shift, toward its end, or even in the evening after working hours. Typically, on days away from work, a person will improve or have no symptoms at all. It is important to note that shiftwork disrupts circadian rhythm and, among its many adverse effects, may also affect asthma symptoms and/or the performance of asthma medications.

What kinds of potential allergens could a person encounter at work?

Workplace exposure could include airborne gases, vapors, aerosols, fumes, dusts, or fibers. Sensitizers could include chemicals that are very small (low-molecular-weight) or large (high-molecular-weight), as well as chemicals produced by living organisms or pieces of organisms. Below are some examples of allergens with their typical occupations. (Please note that this is not an exhaustive list.)

EXAMPLES OF POTENTIAL ALLERGENS	OCCUPATIONS
Animal allergens, dander	Farmers, persons who work with laboratory animals, veterinarians
Plants	Greenhouse workers, farmers, parks and forestry workers
Natural rubber, latex	Latex-glove makers and users (such as health care workers), makers and users of other latex products
Molds, fungi	Construction/demolition workers; remediators of flood/storm events or other water damage
Cereals and grains Other foods (such as milk powder and egg powder)	Farmers, grain workers, bakery workers Food-production workers, cooks
Enzymes	Laboratory workers, pharmaceutical workers, bakery workers, laundry

	workers
Fish and crustaceans	Workers handling herring or snow crabs
Diisocyanates (such as, toluene diisocyanate, hexamethylene diisocyanate, and methylene diphenyl diisocyanate)	Makers of rigid or flexible polyurethane foam, installers of polyurethane foam insulation, urethane spray painters, those who work with urethane adhesives or urethane molds in foundries
Acrylic monomers	Chemical-industry workers, dental workers, cosmetologists or nail technicians applying artificial nails
Wood dusts (such as, from red cedar and many exotic woods; olive, pine, and others)	Carpenters, sawmill workers, forestry workers
Complex platinum salts Other metal salts (such as nickel, chromium)	Refinery workers, jewelry workers Metal-plating workers, welders of stainless steel

Unfortunately, even several years after removal from exposure, approximately 70% of people with occupational asthma can still experience asthma symptoms. **So, the best approach is to be diagnosed early, before the asthma becomes severe, and to identify the allergen and reduce/stop the exposure.**

How could exposure to a workplace sensitizer be reduced or stopped?

Depending upon how the allergen is used or exposure occurs, reducing or stopping a workplace exposure could include:

- using an alternative chemical to the allergen
- changing from a dry to a wet process for dust control
- using local exhaust ventilation to capture and remove or dilute the allergen
- enclosing the work process to capture the allergen
- using measures to decrease the likelihood of a chemical (or dust) leak or its impact
- using respiratory protection
- placement in a different job, away from the allergen

Under the Americans with Disabilities Act (ADA), a worker can request that the employer accommodate his/her occupational asthma.

The above examples for reducing or eliminating occupational exposure could be used for reasonable accommodation. Under the ADA, an employer may require that an individual not pose a “direct threat” to the health or safety of himself/herself or others. However, this must be a “significant risk of substantial harm” -- employers cannot deny an employment opportunity merely because of a slightly-increased risk. Assessing “direct threat” must be strictly based on valid medical analyses and/or other objective evidence and must apply to all employees (and job applicants).

But, a different standard of risk may be considered in those cases where risk to the public or other workers is present, as opposed to a risk limited to the worker. Each person must be evaluated as an individual -- different people experience asthma with differing responses as to how quickly or severely they are affected, as well as what an asthmatic reaction at work would entail. For example, is the person a clerical worker near good medical facilities, or a police officer, firefighter, or airline pilot during the

performance of his/her professional duties? A medical evaluation needs to be specific, rather than a general statement such as the individual “may not be exposed to gases, mists, or fumes.” If a direct threat exists, the employer must first try to eliminate or reduce the risk to an acceptable level with reasonable accommodation. But, if an effective accommodation to a direct threat cannot be found, the employer may discharge an employee (or may refuse to hire a job applicant).

What if a worker has asthma that is not caused by a workplace sensitizer? Sometimes a workplace exposure, such as an irritant, can trigger an episode of asthma for an employee with non-occupational asthma. Also, there are symptoms that mimic asthma, such as irritable larynx syndrome. So, even non-work-related asthma can affect the ability to work.

The information in this fact sheet was originally developed for The Center for Occupational & Environmental Medicine at the Erie County Medical Center (ECMC), 462 Grider St., Buffalo, NY 14215. The fact sheet is licenced under a [Creative Commons Attribution-NoDerivatives 4.0 International \(CC BY-ND 4.0\) licence](#).

