CME / CE Information

CME/CE Released: 01/29/2010; Valid for credit through 01/29/2011

This activity has expired.

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Target Audience

This activity is intended for physicians and other clinicians, especially those in primary care.

Goal

The goal of this activity is to describe the importance of documenting a patient's occupational history in the medical record from 3 perspectives: prevention and treatment of individual cases of injury or illness; identification of occupational outbreaks/clusters; and surveillance, epidemiology, and research. In addition, clinicians will learn when and how to refer patients with work-related injuries or illnesses for possible workers' compensation.

Learning Objectives

Upon completion of this activity, participants will be able to:

1. Describe the importance of documenting a patient's occupational history in the medical record from 3 perspectives: prevention and treatment of individual cases of injury or illness; identification of occupational outbreaks/clusters; and surveillance, epidemiology, and research
2. List 3 screening questions that can be used to detect whether a patient's complaint might be work related
3. Recognize when and how to refer patients with work-related injuries or illnesses for possible workers' compensation
4. Identify resources that can help clinicians recognize and manage occupational illnesses and injuries

Credits Available

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A Case for Documenting Occupational History in the Medical Record

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ACPM American College of Preventive Medicine

Introduction

Occupational hazards have been recognized at least since the time of Socrates (c. 469 BC-399 BC), but it was not until around 1700 AD that Bernardino Ramazzini, often dubbed "the Father of Occupational Medicine," made a "striking addition to the art of diagnosis" by suggesting that clinicians ask patients about their occupations.[1]

Despite the passage of the Occupational Safety and Health Act in 1970, work-related injuries and illnesses are still common in the United States. According to recent reviews,[2,3] of the estimated 139 million working Americans:

- 15 die from a work-related injury every day;
- About 3.7 million cases of nonfatal injury or illness occurred in 2008;
- Nonfatal injury or illness occurred in about 3.9 per 100 full-time workers; and
- Injuries account for about 95% of cases of work-related illness or injury.

This article describes the importance of documenting a patient's occupational history in the medical record from 3 perspectives: prevention and treatment of individual cases of injury or illness; identification of occupational outbreaks/clusters; and surveillance, epidemiology, and research. In addition, clinicians will learn when and how to refer patients with work-related injuries or illnesses for possible workers' compensation.

Underrecognition

Although the work-relatedness of injuries may be obvious, and some diseases are well known to have occupational causes (eg, mesothelioma from asbestos exposure), other occupational associations with health outcomes are underrecognized. Reasons for this include the following explanations[4]:

- The clinical and pathologic expression of most occupationally caused diseases is indistinguishable from that of nonoccupational origin;
- Many diseases of occupational origin are multifactorial, with nonoccupational factors playing a contributory role; and
- The effects of occupational exposures often occur after a biologically predictable latent interval following exposure, lasting years or even decades.

Despite the problem of underrecognition, researchers have estimated the proportions of all cases of various common health outcomes that can be attributed to occupational factors (Table).

Table. Estimated Proportions of All Cases Attributable to Occupational Factors and Examples of Specific Occupational Risk Factors for Some Common Health Outcomes [2,5]

Health Outcome	Proportion of All Cases Attributable to Occupational Factors	Examples of Occupational Risk Factors
Pneumoconiosis	Up to 100%	Silica, asbestos, coal dust
Back pain	21%-41%	Injury, repetitive activities
Hearing loss	7%-24%	Noise
Chronic obstructive pulmonary disease	13%-15%	Dust, welding fumes, environmental tobacco smoke
Asthma	5%-18%	Latex, dust, pesticides
Unintentional injuries	8%	Heavy lifting, unguarded machinery, heights, slippery surfaces
Lung cancer	1%-40%	Asbestos, arsenic, hexavalent chromium, radon, workplace environmental tobacco smoke
Leukemia	2%-19%	Radiation, benzene
Bladder cancer	Up to 24%	beta-Naphthylamine (used in textile industry), benzidine (used in dye/pigment manufacturing)
Cardiovascular disease	8%-40%	Job stress, various chemicals
Parkinson's disease	5%-16%	Pesticides, manganese, carbon monoxide

Given the substantial burden of work-related illness and injury, it is important to obtain an occupational history to assess whether a patient's work may have contributed to his or her health condition.[6] According to the American College of Physicians, "Given the

staggering incidence of work-related injury and illness each year, the occupational history rivals family and social histories in providing important data in the clinical encounter.[7]"

The recognition and control of harmful occupational exposures at both the individual and population levels are analogous to pharmacovigilance methods used to monitor adverse drug effects that occur in 3 major phases[8]:

- Signal detection: A suspicion arises that some factor in the workplace may be causing or contributing to health problems;
- Signal strengthening: Data accumulate to support the hypothesized association between the occupational exposure and the health outcome; and
- Signal testing: Clinicians (in the case of individual patients) or researchers (in the case of populations) embark on the evaluation phase during which the association is confirmed, explained, and quantified.

Prevention and Treatment Perspective

Knowing a patient's occupation may help to identify the cause of illness. For example, a clinician might be puzzled by a previously healthy, nonsmoking adult with new-onset asthma, until learning that she recently began wearing latex gloves for a new job as a home health aide. Diagnosing an occupational etiology will improve the chances of the patient's recovery if the exposure precipitating the illness can be reduced or eliminated. Using this example, the clinician may be able to help the patient to convince her employer to switch to nonlatex gloves. Avoidance of latex will not only improve the patient's condition, but additional cases of latex-induced asthma may be prevented among her coworkers by reduced exposure.[9]

Identification of the occupational cause of the patient's asthma and precautionary measures may prevent harmful side effects that could result from the use of medications (eg, inhaled and oral steroids) to control symptoms that would likely persist with continuous exposure to latex.

In the case of an individual patient, signal detection for a work-related illness can be accomplished by asking a few screening questions:

- What kind of work do you do?
- Do you think your health problem could be related to your work?
- Does anyone else where you work have a similar health problem?
- Are your symptoms worse when you are at work or when you are away from work?

If the answer to any of these questions suggests a possible association between the patient's work and his or her illness, further questioning and diagnostic evaluation may lead to signal strengthening. The signal may be tested by removing the patient from the workplace and evaluating whether symptoms improve or by definitive diagnostic tests.

Recognizing and documenting an occupational cause for a specific patient's illness can aid in the treatment plan and allow the patient to apply for workers' compensation to cover medical costs and any lost wages. Workers' compensation is a form of insurance, with premiums covered by employers, that requires employers to provide reasonable and timely payment for work-related illness and injury while protecting employers from punitive litigation under most circumstances. Workers' compensation laws exist in all states, but differ from state to state.

In addition to recognizing the work-relatedness of health conditions that have already occurred, knowing a patient's occupation can lead to education to prevent common work-related problems, such as hearing loss or back pain, before they occur. For example, up to 24% of hearing loss cases could be prevented if no one has been exposed to workplace noise levels above the National Institute for Occupational Safety and Health (NIOSH) recommendation.[5] Many industries, including farming, manufacturing, and construction, expose workers to frequent and excessive noise levels. The proportion of hearing loss cases attributable to occupational noise exposure is especially high in the railroad and mining industries, so workers in these industries should be counseled on the need for consistent use of hearing protection (eg, earplugs or earmuffs).[5]

Taking an occupational history can assist in the management of non-work-related conditions. An understanding of a patient's job and working conditions will help the clinician work with a patient to set restrictions, define limitations, and plan the training needed to help the patient remain at or return to work while avoiding aggravation of his or her condition.

Main filters preventing healthcare providers from taking occupational histories are the perceptions of a lack of time, awareness, and skills to fully investigate the work-relatedness of disease. Fortunately, many resources are available to help clinicians recognize and manage occupational illnesses and injuries:

- *American College of Occupational and Environmental Medicine (ACOEM)* : The ACOEM Doctor Finder Service provides listings of specialists in occupational medicine who are available for referral.
- *Association of Occupational and Environmental Clinics (AOEC)* : The AOEC clinic directory provides listings of participating clinics by state or region.
- *Occupational medicine textbooks: Recommended references include Textbook of Clinical Occupational* and *Environmental Medicine*[4]*and Environmental and Occupational Medicine*.[9]
- *National Institute for Occupational Safety and Health* : NIOSH focuses on occupational safety and health research, and can provide educational materials and consultation.
- *Occupational Safety and Health Administration (OSHA)* : OSHA, through its regulatory authority, enacts and enforces workplace health and safety standards.

Identification of Occupational Outbreaks/Clusters

Taking an occupational history is important to identifying emerging occupational diseases. Primary care clinicians may be the first to see the sentinel cases of a new occupational disease. The 2 examples below illustrate the process of signal detection, signal strengthening, and signal testing in the recognition of new occupational diseases.

Lung Disease Among Flock Workers[10]

Signal detection. In February 1993, a 34-year-old, previously asymptomatic man who worked in a textile plant in Rhode Island suddenly developed headache, pleuritic chest pain, and dyspnea 3 hours into his work shift. His symptoms disappeared spontaneously, but a few months later he began to experience work-related dyspnea that resolved shortly after the end of each shift. A pulmonologist suspected occupational hypersensitivity pneumonitis, removed the patient from work, and prescribed prednisone. Two months after leaving work, the patient felt better and his lung function improved. He was referred to an academic occupational medical clinic.

Signal strengthening. In December 1995, a 28-year-old worker from the same plant was referred to the same occupational clinic with presumed occupational hypersensitivity pneumonitis. Subsequently, the occupational clinicians learned of an earlier outbreak of 5 cases of nongranulomatous interstitial lung disease and 2 recent cases of biopsy-confirmed cases at a Canadian plant owned by the same textile company. It was determined that the original diagnoses of hypersensitivity pneumonitis did not accurately fit the clinical picture of these cases. No evidence of exposure to agents known to cause hypersensitivity pneumonitis occurred within the company, so it appeared that these cases represented a new occupational disease.

Signal testing. An investigation of the Rhode Island facility identified 8 total employees meeting the case definition for a new interstitial lung disease called "flock worker's lung." The investigation also implicated a causative agent: airborne, respirable-size nylon fragments generated during a process called "flocking." In the flocking industry, short fibers (flock) are cut from cables of parallel synthetic monofilaments (tow) and applied to an adhesive-coated fabric to create a material, such as the "fleece," used in many jackets.

Neuropathy Among Swine Slaughterhouse Workers[11,12]

Signal detection. In 2006 an occupational health nurse at a swine slaughterhouse in Minnesota noticed that 2 workers who were on disability for neurologic symptoms were having difficulty climbing the stairs to her clinic and that several other employees were reporting similar, unusual neurologic symptoms. She and her colleagues began to suspect that they were dealing with an occupational illness related to the slaughterhouse environment, notified plant management, and referred the workers to a specialty group.

Signal strengthening. In October 2007, the specialists notified the Minnesota Department of Health about the cluster of unexplained neurologic illness among workers at the slaughterhouse, and state public health officials, along with the US Centers for Disease Control and Prevention (CDC), conducted an investigation. By January 2008, 12 workers at the plant had been identified with confirmed, probable, or possible cases of progressive inflammatory neuropathy. Exposure to splattered (and possibly aerosolized) brain material from extraction of swine brains using compressed air was implicated as the cause of the illness. A specific etiologic agent (either infectious or noninfectious) has yet to be identified.

Signal testing. A survey of other large swine slaughterhouses identified 2 other facilities that used the same technique to extract brains using compressed air. Cases of progressive inflammatory neuropathy were identified among workers at one of these facilities, further supporting an association between the illness and this technique. The technique has been discontinued at all 3 plants.

These examples illustrate how astute clinicians can contribute to the discovery of new occupational diseases. Control of occupational disease outbreaks can be facilitated by referring individual cases or clusters of suspected work-related illness to occupational medicine specialists and/or state health departments. If state health departments lack the resources to complete an investigation, assistance can be requested from NIOSH. In addition, assistance from NIOSH in the form of a Health Hazard Evaluation (HHE) can be requested directly by 3 current employees, authorized representatives of employees, or employers. Note that clinicians cannot request an HHE on behalf of their patients.

Surveillance, Epidemiology, and Research

Documenting the patient's occupational history in the medical record allows researchers to study occupational associations for various health outcomes, such as cancer, by increasing the chance of signal detection and contributing to signal strengthening. Some occupational associations may not even be recognized until many years or decades worth of medical data are available for researchers to review, as was the case with asbestos and mesothelioma.

From the surveillance, epidemiology, and research perspective, it is useful to record the patient's industry and occupation of employment in the medical record. "Industry" is the kind of activity at a person's place of work, such as automobile manufacturing, whereas "occupation" is the kind of work that a person performs at his or her place of work, such as assembler. In addition to recording this information for the patient's current main job, it is useful to consider and record it for the patient's longest-held (usual) job, any part-time or secondary jobs, and any history of military service. Any of these jobs may be associated with exposures that contributed to the patient's medical condition.

In 1992, the Cancer Registries Amendment Act (Public Law 102-515) required central registries funded by the CDC to collect occupation or industry information on each patient with cancer from the medical record.[13] These data have the potential to greatly increase the understanding of the occupational etiology of cancer, but are often missing from the medical record. Healthcare providers can help solve this problem by ensuring that occupation and industry information are available in the medical record of all of their patients with cancer. Once electronic medical records become widespread, availability of industry and occupation data will assist with the investigation of a wide range of chronic diseases and help elucidate occupational causation.

Conclusions and Recommendations

There are many reasons why clinicians should consider and document all patients' occupational histories. At each patient encounter, the healthcare provider can quickly ascertain whether the presenting illness may be related to workplace exposures by asking a few screening questions, as described earlier. Additional useful questions include:

- Are you currently exposed to chemicals, dusts, metals, radiation, noise, or repetitive work or were you in the past?
- Have you recently started working with any new materials or started doing any new activities at work?

If an occupational disease is suspected, many resources are available to assist the clinician. In addition, the clinician can consider referring the patient to an occupational medicine specialist. The specialist will collect a full occupational history including a detailed assessment of all jobs the patient has ever held, identification of potentially hazardous exposures (eg, physical, chemical, biological, psychological) at each of those jobs, and evaluation of the relationship between symptoms and work.

Clinicians should be aware of state requirements for reporting specific occupational diseases, such as pesticide poisoning and lead poisoning, and any unusual disease clusters, which would include potential occupational clusters. The Council of State and Territorial Epidemiologists provides links to reportable conditions Websites for each state. (*Of note, the aforementioned link is optimized for Internet Explorer only*.) Clinicians are encouraged to refer to the resources described in this article for the evaluation of individual cases and illness clusters for occupational causes.

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Disclaimer

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