Occupational History Quality in Patients With Newly Documented, Clinician-Diagnosed Chronic Bronchitis*

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Background: **Approximately 15% of cases of COPD, including chronic bronchitis, is attributable to occupational exposures. An occupational history is essential to identify exposures responsible for work-related chronic bronchitis.**

Methods: **We conducted a structured retrospective analysis of the medical records of veterans, 18 to 70 years of age, newly diagnosed with chronic bronchitis in order to achieve the following: (1) to assess the quality of documented occupational histories; and (2) to characterize the management of patients with a history of exposure to a potentially hazardous respiratory substance. We also analyzed occupational exposure data reported by patients on a structured questionnaire.**

Results: **Sixty patients were included in the final analysis. A total of 6,150 notes were reviewed. Occupational status was documented in the records of 54 patients (90%). A description of occupational duties was recorded in 32 records (53%), and work exposure data in 26 records (43%). Clinicians concluded that occupational exposures potentially contributed to chronic bronchitis in three patients (5%). A recommendation for exposure avoidance was documented for six patients (10%). On the questionnaire, most patients reported a history of occupational exposure to respirable substances and symptoms of cough and/or shortness of breath.**

Conclusions: **Details about job duties and occupational respiratory exposures were documented in the records of approximately half of patients with newly diagnosed chronic bronchitis. Patient self-reports of occupational exposures and respiratory symptoms were common. A determination that occupational exposures contributed to chronic bronchitis was rare. Few patients were counseled to take measures to avoid occupational exposures. Work-related chronic bronchitis may be incompletely assessed and undermanaged by clinicians.** ***(CHEST 2009; 135:378–383)***

Key words: chronic bronchitis; occupational exposure; occupational medicine; workplace

Abbreviations: ICD-9CM = *International Classification of Diseases*, ninth revision, clinical modification; PFT = pulmonary function test; VAPAHCS = US Department of Veterans Affairs Palo Alto Health Care System

Chronic bronchitis is a disease characterized by cough productive of phlegm on most days for not < 3 months in each of 2 consecutive years. It is associated with air-flow obstruction, dyspnea, and wheeze.[1] Chronic bronchitis and emphysema have been historically linked as the two major manifestations of COPD, although recently COPD has been defined as the physiologic finding of nonreversible pulmonary function impairment.[2]

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While smoking is the most important risk factor for chronic bronchitis, occupational exposures contribute to a large burden of disease. Reports[3–5] assessing the role of occupational exposures in the pathogenesis of COPD including chronic bronchitis have indicated that 15 to 20% of cases are attributable to respiratory hazards such as vapors, gases, dusts, and fumes that are encountered in the workplace.

A diagnosis of chronic bronchitis can only be established by obtaining a medical history. Management of patients should include exploration of disease risk factors, including occupational respiratory exposures, in order to determine whether interventions to reduce toxic exposures may be warranted.[6] Despite the fact that the best instrument for identifying an occupational etiology for a disorder is the occupational history,[7,8] occupational histories obtained by health-care providers are commonly incomplete.[9,10]

We have previously shown[9] that clinicians who manage adults with newly diagnosed asthma take incomplete occupational histories and may fail to diagnose work-related asthma. The failure to recognize occupational illness represents a missed opportunity to identify causation and to make important health-care interventions.

We conducted a structured retrospective analysis of the medical records of patients with a newly documented diagnosis of chronic bronchitis in order to assess the quality of clinicians' occupational histories and to characterize the management of patients reporting a potentially hazardous respiratory exposure. We included patients with a *International Classification of Diseases*, ninth revision, clinical modification (ICD-9CM) code for chronic bronchitis code (491) or any related subgroupings of patients that included those with and without air-flow obstruction.

Materials and Methods

Overview.

We abstracted demographic, occupational history, and smoking history data from the medical records of patients with a new diagnosis of chronic bronchitis. We compared occupational histories documented by clinicians with occupational exposure data documented by the study patients on a structured self-administered questionnaire. We analyzed pulmonary function test (PFT) results to assess physiologic impairment. We also conducted a structured examination of the actions taken by health-care providers based on their occupational history assessments. The study was approved by the Stanford University Administrative Panel on Human Patients in Medical Research and the US Department of Veterans Affairs Palo Alto Health Care System (VAPAHCS) Research and Development Committee.

Study Setting and Medical Record System

The study was conducted at VAPAHCS. VAPAHCS utilizes an electronic health record system. All health-care provider notes and virtually all other elements of patient medical records, including all test results, physician orders, medication lists, and ICD-9CM diagnoses are stored in electronic format. Pulmonary function laboratory questionnaires are among the few documents that are archived as hard-copy paper files.

VAPAHCS Pulmonary Function Laboratory Questionnaire

As part of routine clinical care, patients referred to the pulmonary function laboratories of VAPAHCS are directed to complete a structured self-administered questionnaire that ascertains information about pulmonary health. The PFT questionnaire includes domains on pulmonary history and current status, respiratory symptoms (cough and dyspnea), bronchodilator medication usage, smoking history, and occupational exposures (Table 1). The patients' responses to the questionnaire are not included in the PFT study interpretations that are entered into the patients' electronic medical records. Therefore, referring clinicians are effectively blinded to the responses their patients provide on the PFT laboratory questionnaire.

Study Population and Data Abstraction

We reviewed the medical records of all patients at VAPAHCS who, during the period from January 1, 1999, through March 31, 2008, (1) were 18 to 70 years of age, (2) had a newly reported diagnosis of chronic bronchitis (ICD-9CM code 491) or any related subgroupings, (3) had completed pulmonary function testing, and (4) had completed a PFT laboratory questionnaire that was available for review. We conducted a computerized search to identify patients who met the first two inclusion criteria listed above. Then, we reviewed pulmonary function records to identify those patients who also met criteria 3 and 4.

Two investigators (S.H. and M.A.) abstracted individual patient medical records for the time period 1-year prior to and 1-year following the date of entry of the ICD-9CM code for the diagnosis of chronic bronchitis into the medical record. We searched electronic medical records for the documentation of occupational histories, either formally titled as such or embedded

Table 1—*Domains and Questions Abstracted From the VAPAHCS Pulmonary Function Laboratory Questionnaire*

Domains and Related Questionnaire Items
Occupational history
Have you ever worked in a dusty place?
Have you ever worked in a mine, quarry, or foundry?
Have you ever worked near gases or fumes?
Smoking history
Have you ever smoked cigarettes?
Are you currently a smoker?
How many packs a day?
How many years?
Respiratory symptoms
Do you ever cough?
Do you get short of breath?
Medication use
Do you use inhalers?
What kind?