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Official publication of the American College of Chest Physicians



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*Chest* 1993;104;254-258

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## special report

### Physician Perceptions and Management of COPD\*

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To assess awareness and understanding of obstructive airway diseases by primary-care physicians, the authors surveyed a randomly selected population of 75 primary care practitioners. During one-on-one interviews, physicians were presented with a standardized case scenario and a subsequent series of open-ended questions concerning asthma and COPD. Each respondent was presented in randomized fashion with one of two versions of a case description of a hypothetical 52-year-old male smoker with a recent upper respiratory tract infection and persistent productive cough. The only difference between case descriptions was that one included explicit reference to an earlier tentative diagnosis of chronic bronchitis (CB version); the other description made no specific mention of this diagnostic term (NCB version). Chest radiographs were requested by 80 percent of physicians and sputum cultures by 50 percent, these percentages not differing significantly between CB and NCB groups. Spirometry was requested less often than either of the foregoing tests (21 percent). The CB group requested spirometry significantly more often than the NCB group (38 percent vs 5 percent,  $p < 0.05$ ). The most frequently mentioned primary diagnosis was bronchitis/pneumonia (33 percent), followed by bronchitis (28 percent) and chronic bronchitis (16 percent), all of which were similar in both groups. However, the diagnostic term "COPD" was the primary diagnosis in 16 percent of the

Asthma and COPD are common and generally distinct respiratory disorders characterized by airflow obstruction, usually intermittent in the former and incompletely reversible in the latter. Although these two broad categories of obstructive lung disease have been distinguished conceptually for many years, only recently has differentiation given rise to practical differences in primary-care strategies. Improved understanding of their differing pathophysiologic features and the availability of new classes of medication have led to different recommendations concerning therapy.<sup>1-3</sup> To choose but one example, anti-inflammatory therapy is increasingly emphasized in asthma management protocols, whereas the role of anti-inflammatory drugs remains uncertain and probably is minimal in COPD.

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CB group, compared with 8 percent in the NCB group ( $p > 0.05$ ). Oral antibiotics were the most frequently chosen first-line drug therapy (63 percent). In subsequent questions concerning the management of obstructive airway diseases, primary practitioners distinguished COPD from asthma conceptually, but their prescribed therapy for the two disorders was less distinct.  $\beta_2$ -agonists were selected most frequently and similarly as initial therapy for both disorders (53 percent). Minor differences between first-line therapeutic choices included nonsignificant trends toward the more frequent mention of anticholinergic bronchodilators for COPD than for asthma (10 percent vs 0 percent) and the more frequent selection of inhaled corticosteroids for asthma (12 percent vs 5 percent). The authors conclude that to the extent that questionnaire responses reflect actual practice, primary care practitioners (1) have a low index of suspicion for obstructive airway disease, (2) markedly underutilized spirometry as a screening tool, (3) consider  $\beta_2$ -agonists first-line therapy for COPD and asthma, and (4) despite considering COPD and asthma different disease processes, choose similar medications for each disorder.

(*Chest* 1993; 104:254-58)

CB = chronic bronchitis version; CI = confidence interval;  
NCB = no chronic bronchitis

To determine whether these conceptual differences have been incorporated at the primary-care level, we assessed physician attitudes and management decisions regarding COPD through presentation of a case scenario and open-ended questions during one-on-one interviews.

#### METHODS

##### Study Group

Seventy-five primary-care physicians in active private practice in Canada were selected at random from a published Canadian medical directory and included in the sample if they had obtained their medical license after 1954. The sample was balanced regionally as follows: Ontario, 20; Quebec, 20; Maritime Provinces, 10; Prairie Provinces/British Columbia, 25. Within each region, the sample was apportioned so that urban and rural practitioners were equally represented. Questionnaires were administered by trained interviewers blinded to the study's purpose and hypotheses.

##### Interview

Interviews were approximately 45 min in duration. Before learning the general subject of the interview, practitioners were

presented with one of two versions of a hypothetical case scenario (Appendix). The scenario described a 52-year-old smoker with symptoms suggestive of a recent upper respiratory tract infection with subsequent persistent productive cough. The patient reported having suffered similar episodes previously, and on examination of the chest, expiratory wheezes were heard. The only difference between versions of the scenario was that one version made explicit reference to an earlier tentative diagnosis of chronic bronchitis (CB version) and the other made no mention of this diagnostic term (NCB version). The remainder of the interview consisted of open-ended questions regarding perceptions and treatment of obstructive lung disease and the ranking of several statements on a scale of 1 to 7, on which 1 was "definitely disagree" and 7 was "definitely agree."

#### Data Analysis

Results are expressed as mean  $\pm$  SEM. Open-ended responses were categorized by trained nonphysician research staff, who remained blinded to the purpose of the study. Normally distributed data were analyzed using confidence intervals (CIs). That is, the 95 percent confidence limits for each mean value were calculated, and means were accepted as being statistically significant if the 95 percent CIs were not overlapping. Proportions were compared by means of the  $\chi^2$  test; proportions were accepted as being statistically different when  $p$  was less than 0.05.

### RESULTS

The physicians reported treating a mean of  $154 \pm 7$  patients per week, of which 25 percent were patients with respiratory disorders. Physicians estimated that they prescribed bronchodilators an average of  $42 \pm 4$  times per month. Both COPD and asthma patients were among the three largest groups of respiratory diagnoses identified by the majority of physicians, accounting for 26 percent and 28 percent of all respiratory patients, respectively. Cases of "acute bronchitis" and viral upper respiratory tract infections accounted for 25 percent of the remaining diagnoses.

#### Diagnosis

When asked to define COPD, the four most common responses were "patient with chronic lung disease/respiratory disease" (37 percent), "productive cough/sputum" (20 percent), "progressive airflow limitation" (19 percent), and "chronic bronchitis or emphysema" (15 percent). Smoking was the most frequently mentioned characteristic associated with the COPD patient (63 percent,  $p < 0.05$ ), while dyspnea/wheezing, older age, and/or chronic productive cough

**Table 1—Differences Between COPD and Asthma Mentioned by Primary-Care Physicians**

	Percentage of Physicians
Asthma is reversible/responds better to treatment/is not always chronic	41*
Asthma has acute onset/Asthma is more severe	20
Asthma often occurs in younger patients	19
Wheezing is the main difference	17
Asthma is associated with allergies	16

\*Mentioned more frequently than other responses ( $p < 0.05$ ).

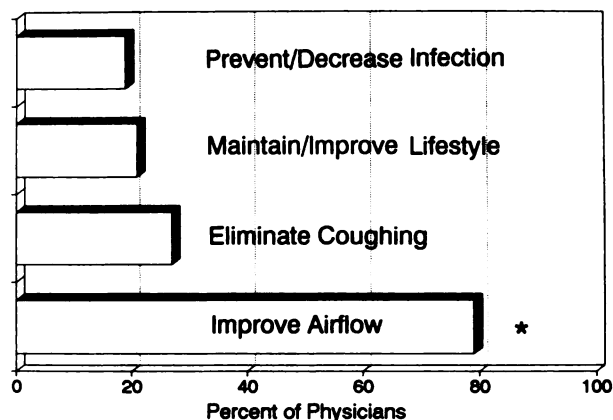
were mentioned significantly less often by physicians (approximately 33 percent each).

When distinguishing asthma from COPD, reversibility and better response to therapy were identified significantly most often by physicians (41 percent,  $p < 0.05$ ) as characteristic of asthma rather than COPD. Other general features (Table 1) were mentioned less often. However, when questioned as to how they personally distinguished their office patients with asthma from those with COPD, patient history was the dominating criterion, having been mentioned by 40 percent of physicians, significantly more often than other methods of distinction (eg, pulmonary function studies, degree of reversibility).

#### Treatment

In rating their agreement or disagreement with a number of statements concerning COPD and asthma, physicians supported the concept that asthma and COPD are different in terms of their pathology, treatment, and development. The mean value of 5.08 associated with the assertion "I treat asthma differently from COPD" was accompanied by a 95 percent CI of 4.74 to 5.42, significantly different from the "neutral" value of 4.00. Similarly, the statement "COPD is pathologically different from asthma" yielded a mean value of 5.47 and a 95 percent CI ranging from 5.13 to 5.81, again excluding 4.00 (Fig 1).

The most frequently stated therapeutic goal of drug therapy in COPD was improvement of airflow, cited by 79 percent of physicians. The 95 percent CI, ranging from 67.68 percent to 87.29 percent, did not overlap with other intervals, implying a significant difference from other potential therapeutic goals. To eliminate cough or sputum production and maintain or improve patient life-style were next most frequently seen as important goals in treating COPD (Fig 2). Physicians agreed that "early intervention is the key



**FIGURE 1.** Mean physician ratings of statements regarding asthma and COPD. Asterisk indicates that the mean response was significantly different from the neutral value of 4.

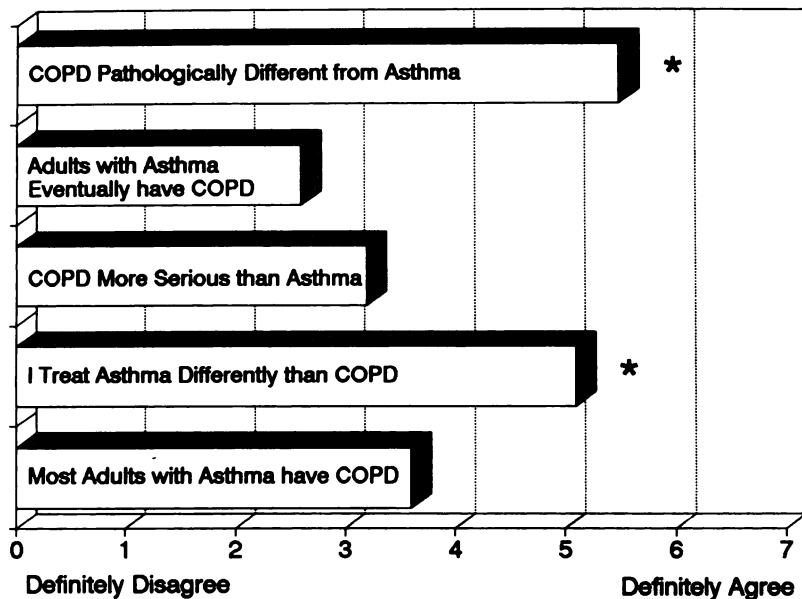


FIGURE 2. Proportion of physicians mentioning the listed statements when asked what the goals of drug therapy were in COPD. Asterisk indicates that the response was mentioned more frequently than the other responses ( $p < 0.05$ ).

to treatment,” with an average score of 5.61 on the 7-point scale. The corresponding 95 percent CI of 5.32 to 5.90 excluded the neutral value of 4.00. “Treating COPD patient by improving life-style” had a mean score of 6.32, with a 95 percent CI of 6.16 to 6.48, again excluding 4.00.

In terms of choice of initial drug therapy in COPD, inhaled  $\beta_2$ -agonists alone were considered first-line medication, having been selected by 53 percent of physicians (Fig 3). The 95 percent CI ranged from 41.45 percent to 64.95 percent, not overlapping with any other interval.  $\beta_2$ -agonists alone were also considered to be first-line medication by 64 percent (48/75) in the treatment of asthma (95 percent CI = 52.09 percent to 74.77 percent). Although  $\beta_2$ -agonists were

selected most frequently as initial therapy for both disorders, nonsignificant trends between choice of first-line agents for treatment of asthma and COPD included the more frequent mention of anticholinergic bronchodilators for COPD (10 percent vs 0 percent) and the more frequent mention of inhaled corticosteroids for asthma (12 percent vs 5 percent). With respect to other bronchodilator classes, the majority of physicians (80 percent) indicated that they prescribe ipratropium bromide for their COPD patients; nearly one third of the COPD patients of those physicians were taking ipratropium bromide at the time of the interview. A small minority of physicians chose theophylline preparations as first-line therapy for asthma or COPD. Physicians reported that only 2 percent of their respiratory patients were using long-term oxygen therapy.

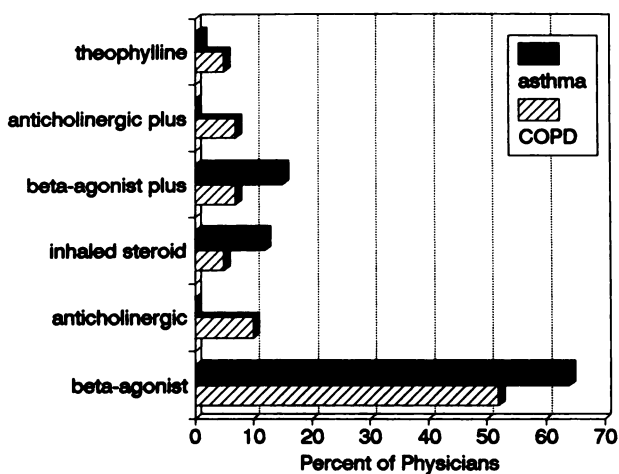


FIGURE 3. Proportion of physicians who mentioned the medications listed when asked what their first-choice drug therapy was for COPD and asthma. The notation “plus” indicates that at least one other drug was mentioned in addition to the category listed. Asterisk indicates that the drug was mentioned more frequently than the other categories ( $p < 0.05$ ).

#### Patient Cases

Of laboratory tests requested to establish the diagnosis after presentation of the hypothetical case scenario, chest radiographs were the most frequently ordered, having been chosen by 80 percent of physicians, significantly more often than other tests (95 percent CI = 69.2 percent to 88.4 percent). Sputum cultures were ordered next most commonly (approximately 50 percent of physicians). Only 5 percent of physicians requested any form of pulmonary function test in response to the NCB version of the scenario. Significantly more physicians (38 percent,  $p < 0.05$ ) requested this test following the CB version. Requests for other diagnostic tests were unaffected by the scenario version. About 59 percent of the physicians had direct access to pulmonary function tests and 45 percent to arterial blood gas measurements, while 33 percent reported no direct access to either of these tests.

The most frequently mentioned diagnostic term for the primary diagnosis was "bronchitis/pneumonia" (33 percent), followed by "bronchitis" (28 percent) and "chronic bronchitis" (16 percent), all of which were similar in incidence in both groups. While the term "COPD" was a primary diagnosis in 16 percent of the CB group and 8 percent of the NCB group, this difference was not statistically significant.

Oral antibiotics were the drug therapy of first choice 63 percent of the time (95 percent CI = 50.73 percent to 73.57 percent), significantly more often than other forms of treatment. This preference for antibiotic was unaffected by which version of the scenario was heard, being chosen 71 percent (95 percent CI = 54.10 percent to 84.58 percent) of the time following the NCB version and 54 percent (95 percent CI = 36.92 percent to 70.51 percent) of the time following the CB version. The second-line drug therapy mentioned most frequently for both versions was an inhaled  $\beta_2$ -agonist. While the frequency with which inhaled  $\beta_2$ -agonist was prescribed following the CB version tended to be lower than that following the NCB version (39 percent vs 19 percent), this difference was not significant.

#### DISCUSSION

Our data show that primary-care physicians resort infrequently to laboratory measures of expiratory airflow when confronted hypothetically by a smoker with recurrent respiratory symptoms and physical findings suggestive of airflow limitation. Our data also show that despite reports by physicians that they distinguish clearly between asthma and COPD conceptually, their therapy for the two disorders is less distinct. Moreover, practitioners' self-reported prescribing habits lag behind current guidelines and recommendations for treatment of the obstructive airway diseases.

We found that physicians generally distinguish COPD from asthma in physiologic and clinical terms. However, choice of medications is similar. Anticholinergic therapy and inhaled corticosteroids are considered to be first-line medications for patients with regular symptoms of COPD and asthma, respectively, by several authorities. Yet a minority of the physicians surveyed chose either agent as initial therapy. Anticholinergic bronchodilators were selected more often for COPD and inhaled steroids more often for asthma, although one might expect a larger discrepancy than shown given recent recommendations and the clear distinctions that physicians made between asthma and COPD. Theophylline was chosen by a small minority of physicians as first-line therapy during specific questioning regarding COPD and asthma and by fewer than 5 percent of physicians as first- or second-line therapy in the case scenarios, suggesting that theophylline is now considered a less important form of

therapy.

With regard to the case scenarios, we recognize that the term "chronic bronchitis" may or may not imply airflow limitation.<sup>1,2</sup> Although it is difficult to generalize, in common parlance in Canada, "chronic bronchitis" is used to imply COPD. It appeared that physicians were minimally influenced by inclusion of the term "chronic bronchitis" in case scenarios. The most significant influence of this term was in the frequency of requesting an objective measure of airflow. Overall, "COPD" is a diagnostic term that physicians use to diagnose and describe their patients. They recognize that COPD encompasses chronic bronchitis and emphysema and that COPD is clearly different from asthma in terms of pathophysiology and clinical findings. However, their theoretical acceptance and use of the term "COPD" in their daily practice is not carried through to its practical conclusion—differentiating between medication use in COPD and asthma.

Chronic obstructive pulmonary disease is now the fifth most common cause of death in North America and is the only leading cause of death increasing in prevalence.<sup>4</sup> The best hopes for intervention appear to be early detection and smoking cessation. Unfortunately, the symptoms of early or mild COPD are nonspecific, and the physical examination is insensitive. Against this background, it is disturbing to find simple screening spirometry used so infrequently in primary practice. The same concerns may also apply to the detection of asthma, a common chronic respiratory illness said to be underdiagnosed.<sup>5-7</sup>

Pride et al<sup>8</sup> assessed responses to diagnostic labels applied to model case histories of chronic airflow obstruction by evaluating questionnaire responses sent to 121 respiratory physicians from Canada, the United States, and nine western European countries. They found that selection of investigations was determined more by the diagnostic label than by the need to define selective characteristics in such patients. The diagnostic labels "asthma," "chronic bronchitis," and "emphysema" remained prominent in clinical practice. However, the term "chronic bronchitis" remained a source of confusion unless accompanied by information regarding airflow obstruction. We found that the term "chronic bronchitis" caused more physicians to request spirometry, but did not influence the choice of other investigations. The study by Pride et al involved a larger sample size, and the questionnaires were sent to respiratory medicine specialists and were unsupervised, whereas the present study was conducted through personal interviews with general practitioners. The study by Pride et al did not independently question opinions regarding asthma and COPD. To our knowledge, there are no other comparable published reports in the literature.

In summary, to the extent that questionnaire responses reflect actual practice, primary practitioners (1) have a low index of suspicion for obstructive airway disease, (2) markedly underutilize spirometry as a screening tool, (3) consider  $\beta_2$ -agonists first-line therapy for COPD and asthma, and (4) despite considering COPD and asthma different disease processes, choose similar medications for each disorder. We conclude that further education with regard to pharmacologic therapy in obstructive lung diseases and the indications for spirometry should be directed at the primary-care physician.

#### APPENDIX. HYPOTHETICAL CASE SCENARIOS

##### *Case 1 (NCB)*

You are asked to see a new patient, a 52-year-old man recently transferred from another province. He is suffering from a cough productive of yellow sputum, a problem that began 8 days ago with symptoms of fever, sore throat, and myalgia. His fever and other "flulike" symptoms have resolved, but his cough persists. He suffered a similar illness last winter, and his cough lingered for 6 to 8 weeks. He smokes one package of cigarettes per day and consumes alcohol in moderation. He has had no significant past medical illnesses and takes no medications regularly. On examination, he is mildly overweight, and his vital signs are unremarkable. There are no focal findings in the chest, although there may be an occasional mid-pitched wheeze on forceful expiration.

##### *Case 2 (CB)*

You are asked to see a new patient, a 52-year-old man recently transferred from another province. He is suffering from a cough productive of yellow sputum,

a problem that began 8 days ago with symptoms of fever, sore throat, and myalgia. His fever and other "flulike" symptoms have resolved, but his cough persists. He suffered a similar illness last winter, and his cough lingered for 6 to 8 weeks. He smokes one package of cigarettes per day and consumes alcohol in moderation. He has been told by a previous physician that he has a "touch of chronic bronchitis" but otherwise has no significant past medical illnesses and takes no medications regularly. On examination, he is mildly overweight, and his vital signs are unremarkable. There are no focal findings in the chest, although there may be an occasional mid-pitched wheeze on forceful expiration.

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