University of Kentucky

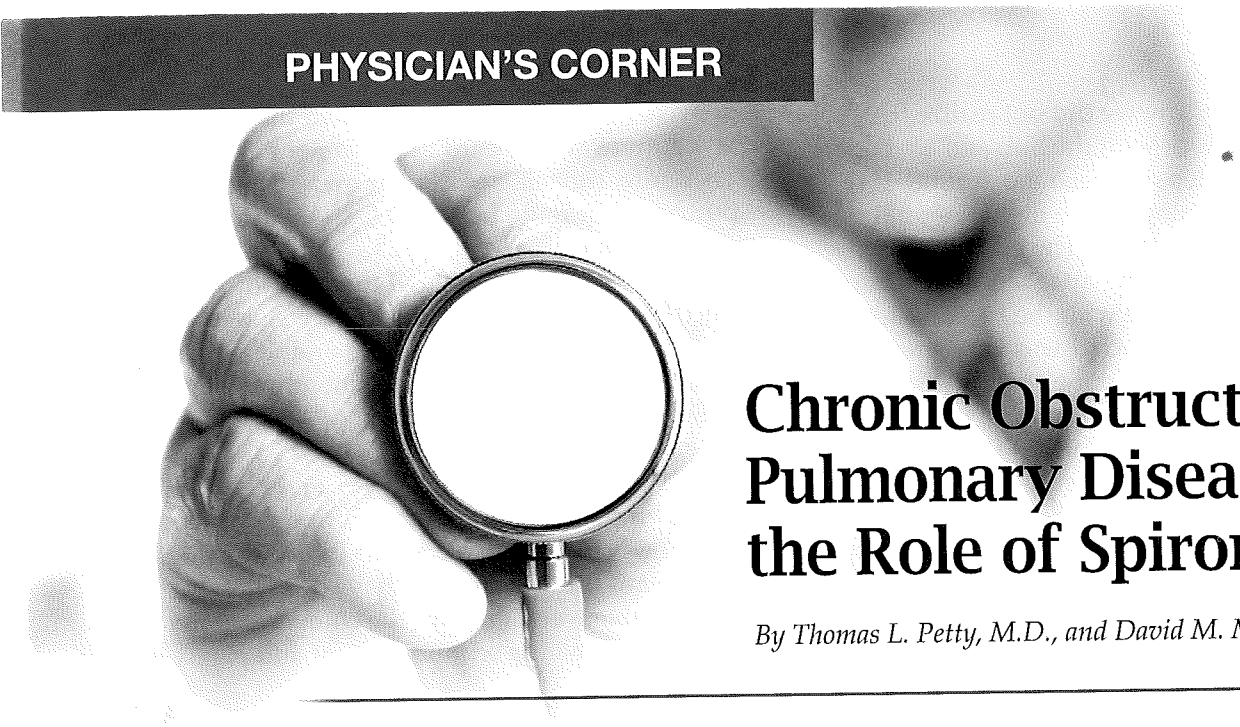
From the SelectedWorks of David M. Mannino

2008

Chronic obstructive pulmonary disease and the role of spirometry

T. L. Petty
David M. Mannino

Available at: https://works.bepress.com/david_mannino/202/



Chronic Obstructive Pulmonary Disease and the Role of Spirometry

By Thomas L. Petty, M.D., and David M. Mannino, M.D.

The recent series of task force reports published in the Annals of Internal Medicine which appear to advise primary care physicians not to do spirometry concerns us (1-3). This could be a big blow (no pun intended) against a nationwide effort to diagnose and treat COPD early (4; 5). COPD is the only disease among the top 5 lethal diseases in the U.S. that is rising in morbidity and mortality (6). Separating the diseases that are decreasing (heart disease, stroke, cancer, and accidents) from COPD are effective early detection and prevention strategies for the former.

The recommendation in the Guidelines figure, in large bold letters, states "Do not screen for chronic obstructive pulmonary disease using spirometry" (2). In the fine print below, however, caveats appear: this recommendation applies to healthy adults who do not recognize or report symptoms to a clinician and it does not apply to individuals with a family history of α1-antitrypsin deficiency. Thus, the flip side of the argument against screening is that unhealthy people (particularly those with a diagnosed respiratory disease), people with respiratory symptoms, and people with a family history of α1-antitrypsin deficiency should have spirometry done. We would add to this list people that the guidelines acknowledge as being at increased risk for COPD (adults over 40 with current or former tobacco use or exposure to occupational or environmental pollutants). This, of course, is not screening but appropriate clinical care.

How are we doing in this regard as clinicians? Not very well. National data from the U.S. and other countries demonstrate that a high proportion of adults with documented impaired lung function have never been diagnosed with ANY respiratory disease (7-9). Furthermore, among people with a clinical diagnosis of COPD, where spirometry is mandatory, a minority of patients have had testing done (10;11). If spirometry use in this group with a clear cut indication is so low, one can imagine that use in patients with chronic respiratory symptoms but no diagnosis is even lower.

Can information obtained from spirometry provide information beyond detecting severe COPD (the endpoint used in the Clinical Guidelines report) (3)? Yes. Even small decrements in lung function, which can be related to processes such as heart disease and diabetes (12) are associated with an increase in all cause mortality, which has been known since the time of the Framingham Study (13;14). Furthermore, in the early stages of COPD, patients are frequently without complaints, but avoid dyspnea by progressively restricting activity. The resulting deconditioning is a major clinical problem that further compromises performance. Failure to diagnose COPD at this stage removes the opportunity to intervene early to interrupt a vicious cycle that often leads to a severely restricted functional status that is very difficult to treat when diagnosis is finally made. Finally, in the absence of readily obtainable spirometry, the clinician will be tempted to diagnose COPD using clinical judgment, which is strikingly inaccurate. Specifically, not only are the majority of COPD patients undiagnosed, but a large proportion of those individuals who carry the diagnosis do not have the condition.

Upon arrival in Warsaw we did not realize that the plane did not dock with the hub and we had to walk down the steps to reach the ground. If I knew that before getting on the flight, I would have requested a wheelchair. The experience was physically taxing and being attached to the Eclipse, which I had to drag along with the FreeStyle on my shoulder, did not help much. I was very short of breath by the time I reached the ground. I should add here that Poland, like many other countries in Europe, lags in accommodations for disabled individuals and I had a number of unpleasant experiences with steps and staircases in Poland. There are very few elevators and escalators in public places.

The other major issue to consider while traveling to Poland is the availability of oxygen on the ground. One can rent oxygen equipment and get oxygen delivered for a very steep price and there are very few options with regard to equipment available. Therefore, traveling with your own system(s)–purchased or rented in the U.S.–is the way to go.

Whenever I could, I plugged the POC into an electrical outlet to add to the battery charge. I did that at the airport, train stations, and when visiting friends. Both POCs converted smoothly to the different electrical current.

Overall, my travel to Poland was a good experience even though I had to take a train from Maryland to Newark, New Jersey to get on a direct LOT flight to Warsaw. But it would not have been nearly as enjoyable were it not for the company of my wife who provided encouragement and plenty of support. ■

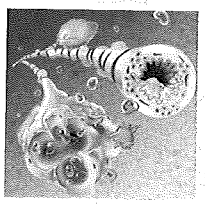
Thank You!

We'd like to extend our thanks to the staff and faculty of **Columbia University's CME Department** for their invaluable efforts in putting together the successful COPD 2007: Inspiration through Education CME and Patient Education Day in New York last fall. **Your work is greatly appreciated!**

In the spring 2008 issue, we asked that you send us a story about your **RT hero!**

We're still taking submissions. Send us your story, along with your name, your address and telephone number, and your RT's name to: *COPD Digest* c/o COPD Foundation, 2937 SW 27th Ave, Suite 302, Miami, FL 33133. Two stories will be selected to be printed in the fall issue of the *COPD Digest*.

Cough. Wheeze. Help!



Many people with COPD have difficulty breathing because their airways make more mucus (sputum) than usual, which tends to clog the airways.

Do you have a persistent cough that produces mucus or shortness of breath – all caused by years of smoking? Are you having more trouble exerting yourself than before? Then you may have chronic obstructive pulmonary disease (COPD).

We are currently conducting a research study to see if an investigational drug is effective in treating people with COPD, especially the effects on exercise ability

866-379-7954
www.mycopdstudy.com

The task force argued that spirometry does not influence smoking cessation. Several new studies refute this conclusion (15-18). The most recent by Parkes et al., in which all patients (smokers 35 and older) had spirometry and equal exposure to cessation resources, but the intervention group was told their lung age, validated cessation rates were more than doubled in the intervention group (6.4 percent vs 13.6 percent) (17).

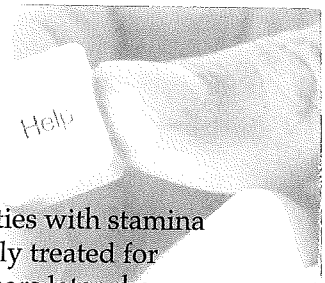
Performance of spirometry is both easy and inexpensive. Industry has responded to the need for spirometry by providing devices that sell for somewhere between $1,000-$2,000, and reimbursement is established at a very reasonable rate averaging about $30, CPT coding 94040, or $57 with bronchodilator evaluation, CPT code 94060. Importantly, this test not only provides strong evidence for a diagnosis of COPD, but can also indicate the presence of other diseases such as restrictive lung.

So what's the bottom line? Should we continue the national drive to find and treat COPD and related disorders early, or should we abandon facts and reason and retreat to a point where we were a half a century ago, when COPD was essentially ignored by the medical profession? At a minimum, good clinical practice mandates that adults with a diagnosis of COPD or other chronic respiratory disease (asthma, sarcoidosis, pulmonary fibrosis) should have spirometry done. In addition, patients with respiratory symptoms or a family history of α1-antitrypsin deficiency should have spirometry done. This, of course, is not screening but case-finding and appropriate treatment of our patients. Finally, it is our hope that the task force will expeditiously reevaluate the evidence for spirometry as an adjunct in encouraging smoking cessation. ■

Dr. Thomas Petty is from the Department of Medicine, University of Colorado, Denver, CO., and Dr. David Mannino is from the Department of Preventive Medicine and Environmental Health, University of Kentucky College of Public Health, Lexington, KY.

Reference List

(1) Qaseem A, Snow V, Shekelle P, Sherif K, Wilt TJ, Weinberger S et al. Diagnosis and management of stable chronic obstructive pulmonary disease: a clinical practice guideline from the American College of Physicians. Ann Intern Med. 2007;147:633-38.
(2) Screening for chronic obstructive pulmonary disease using spirometry: U.S. Preventive Services Task Force recommendation statement. Ann Intern Med. 2008;148:529-34.
(3) Lin K, Watkins B, Johnson T, Rodriguez JA, Barton MB. Screening for chronic obstructive pulmonary disease using spirometry: summary of the evidence for the U.S. Preventive Services Task Force. Ann Intern Med. 2008;148:535-43.
(4) Petty TL, Weinmann GG. Building a national strategy for the prevention and management of and research in chronic obstructive pulmonary disease. National Heart, Lung, and Blood Institute Workshop Summary. Bethesda, Maryland, August 29-31, 1995 [see comments]. JAMA. 1997;277:246-53.
(5) Ferguson GT, Enright PL, Buist AS, Higgins MW. Office spirometry for lung health assessment in adults: A consensus statement from the National Lung Health Education Program. Chest. 2000;117:1146-61.
(6) Jemal A, Ward E, Hao Y, Thun M. Trends in the leading causes of death in the United States, 1970-2002. JAMA. 2005;294:1255-59.
(7) Mannino DM, Gagnon RC, Petty TL, Lydick E. Obstructive lung disease and low lung function in adults in the United States: data from the National Health and Nutrition Examination Survey, 1988-1994. Arch Intern Med. 2000;160:1683-89.
(8) Shahab L, Jarvis MJ, Britton J, West R. Chronic obstructive pulmonary disease prevalence, diagnosis and relation to tobacco dependance in a nationally representative population sample. Thorax. 2006;61:1043-47.
(9) Menezes AM, Perez-Padilla R, Jardim JR, Muino A, Lopez MV, Valdivia G et al. Chronic obstructive pulmonary disease in five Latin American cities (the PLATINO study): a prevalence study. Lancet. 2005;366:1875-81.
(10) Damarla M, Celli BR, Mullerova H, Pinto-Plata VM. Discrepancy in the Use of Confirmatory Tests in Patients Hospitalized with the Diagnosis of Chronic Obstructive Pulmonary Disease or Congestive Heart Failure. Respir Care. 2006.
(11) Joo MJ, Lee TA, Weiss KB. Geographic Variation of Spirometry Use in Newly Diagnosed COPD. Chest. 2008.
(12) Mannino DM, Holguin F, Pavlin BI, Ferdinands JM. Risk factors for prevalence of and mortality related to restriction on spirometry: findings from the First National Health and Nutrition Examination Survey and follow-up. Int J Tuberc Lung Dis. 2005;9:613-21.
(13) Friedman GD, Klatsky AL, Siegelaub AB. Lung function and risk of myocardial infarction and sudden cardiac death. N Engl J Med. 1976;294:1071-75.
(14) Kannel WB. Vital epidemiologic clues in heart failure. J Clin Epidemiol. 2000;53:229-35.
(15) Bednarek M, Gorecka D, Wielgomas J, Czajkowska-Malinowska M, Regula J, Mieszko-Filipczyk G et al. Smokers with airway obstruction are more likely to quit smoking. Thorax. 2006;61:869-73.
(16) van Schayck CP, Loozen JM, Wagena E, Akkermans RP, Wesseling GJ. Detecting patients at a high risk of developing chronic obstructive pulmonary disease in general practice: cross sectional case finding study. BMJ. 2002;324:1370.
(17) Parkes G, Greenhalgh T, Griffin M, Dent R. Effect on smoking quit rate of telling patients their lung age: the Step2quit randomised controlled trial. BMJ. 2008;336:598-600.
(18) Stratelis G, Molstad S, Jakobsson P, Zetterstrom O. The impact of repeated spirometry and smoking cessation advice on smokers with mild COPD. Scand J Prim Health Care. 2006;24:133-39.



Meet Alice Stevens

C.O.P.D. Information Line Associate

Alice was born and raised in Abington, Massachusetts—a rural town with small farms, and lives there to this day in her family home with her son, daughter-in-law, and granddaughter Morgan. Alice worked in the private industry for a few years, then worked the next 35 years at the nearby VA Medical Center until she retired.

Her passion has always been horses, and has had horses since the age of seven. "My COPD has certainly impacted what I am able to do, however I still keep involved in horse activities but these days remain pretty much on the ground."

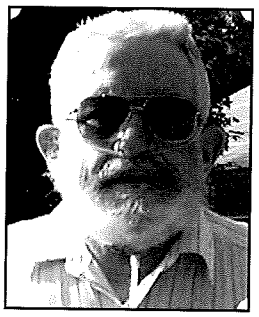
Alice began having some difficulties with stamina in the early 1990's and was initially treated for stress-induced asthma. Several years later she was diagnosed with emphysema. "I had no insight into this disease process," Alice says. "It wasn't until 1998 that I was finally able to quit smoking and I surely wish it had been years sooner."

She found strength in dealing with her COPD when she began pulmonary rehabilitation after her pulmonologist referred her to go. She now exercises regularly at her son's fitness center. "You can't ever quit exercising," she says. "It's just like taking your medicine." It was at the pulmonary rehabilitation facility where she met a fellow COPD patient who volunteered for the C.O.P.D. Information Line and encouraged her to join.

Alice's advice to COPDers: "You can stop smoking if you haven't already. Never give up seeking information about COPD because there are new things happening all the time."

Meet Jim Baber

C.O.P.D. Information Line Associate



Jim was born in Clarksburg, West Virginia, and now lives in Fresno, California with his wife, and two children—a son and daughter. Jim was a senior systems analyst for a large public agency before coming to work as an Associate with the C.O.P.D. Information Line. Before being diagnosed, his hobbies included modeling, a fascination with trains, reading, and computers.

In September of 1993, Jim was diagnosed with a collapsed lung. "I suspected I had emphysema because I had many of the same symptoms my mother had when she was diagnosed with it in 1974," says Jim. "I avoided contact with doctors because I didn't want to have it confirmed."

There soon came a time that Jim could no longer deny his symptoms or the impact they had on his life and activities. "COPD severely restricted my life," says Jim. "I went on disability for three years until I went back to work with oxygen in 1996 at a new job."

Jim was not always proactive with his disease management. "When I was first diagnosed I went into a depression," says Jim. "I joined a group to deal with my depression, and one of the assignments was to report what I was most depressed about. I got on my computer and used the opportunity to research COPD. Because of what I learned then, and continue to learn, I realize there is hope. There are new advances every day."

Working on the C.O.P.D. Information Line has taken an important role in Jim's life. The calls he likes best are from people who are discouraged and just unable to find someone to talk to about their COPD. "I enjoy the reactions I get when someone's attitude changes and they come to the realization that there is still a lot that they are able to do to make their life fulfilling," Jim says. "People have to realize that many of us live many years, even with this 'incurable' disease." ■