

# Chronic Obstructive Pulmonary Disease: Comparison of Care by Specialists and Generalists in an Inner-City Hospital

G Diaz-Fuentes, V Lakshmi, S Blum, S Sy, E Escalera

## Citation

G Diaz-Fuentes, V Lakshmi, S Blum, S Sy, E Escalera. *Chronic Obstructive Pulmonary Disease: Comparison of Care by Specialists and Generalists in an Inner-City Hospital*. The Internet Journal of Pulmonary Medicine. 2004 Volume 5 Number 1.

## Abstract

The goal of the study was to determine whether care for COPD patients was more consistent with guidelines when a specialist rather than a generalist provided care to the patients. We used the Global Initiative for Obstructive Lung Disease guidelines as a standard.

Results: Eighty patients, forty in each group were identified. Care was more consistent with guidelines when specialists were the usual source of care; specialists were significantly more likely to use pulmonary function tests and bronchodilators. There was a trend for generalists to do better in smoking cessation, and vaccine prophylaxis compared with specialists.

Conclusions: Care of COPD patients was more likely to be consistent with guidelines when specialists were the usual source of care. Strategies should be developed to either increase the use of the pulmonologists or to increase the awareness and education of generalists and patients regarding new guidelines for the diagnosis and management of COPD.

## INTRODUCTION

A common strategy of health care organizations in the United States to reduce use of medical services is to increase the use of generalists and limit access to specialists (1).

Studies have suggested that replacing subspecialty physician with generalists for patients with acute cardiac illnesses may lead to worse outcomes for patients. Ayanian and colleagues (2) reported that family practitioners and internists were less aware of or less certain about effective and life-saving drugs for the treatment of acute myocardial infarction than were cardiologists.

Cares for many chronic health conditions including chronic obstructive pulmonary disease (COPD) are delivered by both specialists and generalists. COPD is a major cause of chronic morbidity and mortality and is currently the fourth leading cause of death in the world, and further increases in the incidence and mortality of the disease can be predicted in the coming decades (3). The increasing incidence of COPD has led to the publication of COPD guidelines in 1995 and again recently in 2001 and 2003. (4, 5, 6)

The Global Initiative for Chronic Obstructive Lung Disease

(GOLD) was a collaborative project of the U.S. National Heart, Lung, and Blood Institute (NHLBI) and the World Health Organization (WHO). Its goals are to increase awareness of COPD and decrease morbidity and mortality from this disease by improving prevention and management of COPD and to encourage a renewed research interest in this extremely prevalent disease.

The diagnosis of COPD is based on a history of exposure to risk factors and the presence of airflow limitation that is not fully reversible, with or without the presence of symptoms. Patients who have chronic cough and sputum production with a history of exposure to risk factors should be tested for airflow limitation, even if they do not have dyspnea.

For the diagnosis and assessment of COPD, spirometry is the gold standard as it is the most reproducible, standardized, and objective way of measuring airflow limitation. Inhaled bronchodilators are the recommended drugs for the management of COPD. The 2001 GOLD guidelines did not recommend the long term use of inhaled corticosteroids (ICS); a recent update of these guidelines in 2003 suggests that ICS could be beneficial for COPD patients. (7)

Differences in quality of care and management between generalists and specialists have been described for patients with coronary artery disease and with asthma; few studies have been reported for patients with COPD. (8, 9)

The objective of the study was to determine whether care for COPD patients was more consistent with the GOLD guidelines when a pulmonary specialist rather than generalist was the usual source of care. We hypothesized that care would be more consistent with these guidelines if a specialist was the usual source of COPD care.

## **METHODS**

### **STUDY DESIGN**

This was a retrospective review of a random sample of medical records of patients with the diagnosis of COPD being followed at the outpatient pulmonary and primary care clinics. Patients were identified through the billing diagnosis. The study period was from May 2001 to May 2002. The Institutional Review Board waived the need for informed consent for this study.

In order to be included in the study, patients had to have a minimum of three visits to the physician during the study period. There were six pulmonary and ten primary care attending physicians involved in the care of those patients. We excluded those patients seen at both, the primary care and pulmonary clinic. Patients had full access to drugs thru outside or hospital based pharmacy.

Compliance with visits was evaluated as follows: the current practice in the outpatient's clinics when patients fail to show to a scheduled visit is to document it with a "no show" sticker in the medical record. Any patient that failed a minimum of two visits a year was considered non compliant with visits. The sample subject's visits cover the entire study period.

### **INDICATORS OF CONSISTENCY OF CARE WITH GUIDELINES**

In November 1995, the American Thoracic Society (ATS) (4) set guidelines for the evaluation and management of COPD; this was followed by similar guidelines published by the British Thoracic Society in 1997 and lately the GOLD guidelines that have been updated in 2003. (5, 6) All guidelines emphasize identification of symptoms and the need to perform spirometry in order to diagnose and assess the severity of the disease. In addition, they recommend the use of inhaled anticholinergics, short-acting beta-agonist

(SABA) and long acting beta-agonist (LABA) agents. In addition all the guidelines support screening and education for tobacco cessation.

Focusing on specific recommendations from these guidelines, we identified the indicators to compare. Documentation of symptoms, spirometry, tobacco use and counseling for smoking cessation and use of medications were reviewed. Prescription of influenza and pneumococcal vaccine were assessed.

Categorical variables were analyzed using either chi-square or Fisher's exact tests, while continuous variables were compared using t-tests in the SAS system, version 8.2.

## **RESULTS**

We reviewed eighty patients; forty in each group. Characteristic of the patients regarding demographics and tobacco exposure can be seen in table 1. The distribution for age, sex, race and compliance with office visits was similar for both the groups. Regarding ethnicity is important to note that more than 95% of our patients are either black or Hispanics. Despite the similar incidence of tobacco use in both groups, there were more patients in the pulmonary group who had quit smoking prior to being seen compared with patients in the primary care group (49% versus 17% respectively). Evaluation of compliance with COPD guidelines regarding smoking cessation education showed that smoking cessation was more often addressed in the generalist group than in the specialty one, (93% versus 67% respectively).

**Figure 1**

Table 1: Characteristics and Tobacco exposure in COPD patients

Variables	Generalist n=40	Pulmonologist n=40	p Value
Mean Age	68.6	68.5	0.971
Sex			
Females	12	19	0.108
Males	28	21	
Race			
African American	22	14	0.097
Hispanic	17	26	
White	1	0	
Compliance with visits	33	33	1.00
Tobacco			
Current smokers	30	18	0.0584
Former smokers	6	17	
Non smokers	1	5	
Not documented	3	0	
Cessation offered (Pharmacotherapy and/or counseling )	28/30	12/18	0.02

Documentation of symptoms was available in 68% of the generalist records compared with 55% of pulmonologist. Among these patients, dyspnea followed by chronic cough was the most frequent symptoms in both groups, being present in 69% and 55% respectively.

The consistency of care with guideline indicators regarding the use of Pulmonary Function test (PFT) was greater when a specialist was involved in the care of the patients compared with the generalist. PFTs were done in 98% of patients in the subspecialty group compared with only 40% in the primary care group. The majority of patients seen in each group had moderate COPD by PFTs. (Table 2). Five patients among all the patients that had PFT performed had a normal spirometry and they were treated for COPD in base of symptoms.

**Figure 2**

Table 2: Diagnosis; Use of Pulmonary Function Test and Symptoms

PFT	Generalist n=40	Pulmonologist n=40	p value
PFT done	16/40 (40%)	39/40 (97%)	0.00000003
Mean FEV <sub>1</sub> (range)	62.8 (22-128)	61.2 (24-102)	0.8305
Mean FEV <sub>1</sub> /FVC (range)	72.00 (31-100)	63.9 (27-75)	0.210
COPD Stages			
0 (Normal spirometry)	3	2	0.226
I (FEV <sub>1</sub> > 80%)	3	6	
II (FEV <sub>1</sub> 30-79%)	10	30	
III (FEV <sub>1</sub> <30%)	0	1	
Symptoms Documented	27	22	

PFT: Pulmonary Function Test

Regarding the use of medications (Table 3), the care of patients managed by pulmonary specialists was more consistent with guidelines recommendations.

**Figure 3**

Table 3: Use of medications in COPD patients

Variables Inhaled Medications	Generalist n=40	Pulmonologist n=40	p value
Short acting bronchodilators			0.0004
Given	25	35	
Refused	1	1	
Not prescribed	14	4	
Ipratropium bromide			0.0004
Given	25	35	
Refused	1	1	
Not prescribed	14	4	
Long acting beta-agonists			0.000041
Given	3	20	
Refused	1	4	
Not prescribed	36	16	
Theophyllines	5	15	0.0004
Inhaled corticosteroids			0.0288
Given	14	24	
Refused	1	1	
Not prescribed	25	15	
Compliance with Medications	19/40 48%	26/40 65%	0.11

There was a statistically significant difference in the use of short acting bronchodilators and long acting beta- agonist in patients followed by pulmonologist than by generalists. Until recently, the chronic use of ICS for the management of COPD has not been consistently recommended; despite this, pulmonologists prescribed chronic ICS in 68% of the patients compared with only 38% of generalists. The use of Theophyllines was higher in those patients managed by specialists. Documentation of compliance with medication was better, but not statistically significantly different in the specialty group compared with the primary care group, (65% vs. 48% respectively)

Compliance with guidelines for vaccination was better in the primary care group compared with the specialist group, without reaching statistical significance. (Table 4) Twenty eight patients (70%) were offered Pneumococcal vaccine in the primary care clinic compared with 15 patients (40%) in the specialty clinic. For influenza vaccine, compliance was better for both groups; 77% for generalists versus 73% for specialists. In our study, COPD diagnosis and care was more likely to be consistent with international guidelines when a specialist physician, rather than a generalist, was the usual source of COPD care. Table 5.

**Figure 4**

Table 4: Vaccination in COPD

Variables	Generalist n=40	Pulmonologist n=40	p value
Influenza vaccine			
Given	25	24	0.4149
Contraindicated	0	1	
Refused	6	4	
Not documented	9	11	
Pneumococcal vaccine			
Given	27	15	0.53359
Contraindicated	0	0	
Refused	1	1	
Not documented	12	24	

**Figure 5**

Table 5: Overall Compliance with Guidelines

Variables	Generalist % compliant	Pulmonologist % compliant	p value
Compliance with visits	Similar	Similar	1.00
Smoking Cessation Education	93%	67%	0.02
PFT	40%	98%	0.0000003
Symptoms documentation	68%	55%	0.226
Use SABA	65%	90%	0.0004
Ipratropium bromide	65%	90%	0.0004
Use LABA	10%	60%	0.000041
Use ICS*	38%	68%	0.0288
Theophyllines**	13%	38%	0.0004
Compliance with medications	48%	65%	0.11
Pneumococcal vaccine	70%	40%	0.53359
Influenza vaccine	77%	73%	0.4149

\*Not in guidelines at time of study

\*\* Not in guidelines

SABA: Short acting beta agonist, LABA: Long acting beta agonist, ICS: Inhaled corticosteroids.

## DISCUSSION

Our results are in agreement with previous studies that have shown inconsistency of care with guidelines for COPD by generalists and advantages of specialists in the delivery of COPD care. (10)

Symptoms, especially dyspnea, are important because it has been shown to predict 5-year survival in COPD patients. (11) Documentation of symptoms in our study was sub-optimal for both the groups.

Spirometry is considered to be the gold standard for COPD diagnosis. Impaired lung function, as measured by FEV1, has important prognostic implications. Dyspnea and airway obstruction as measured by FEV1 predicts survival. GOLD recommends spirometry in any patient over age 45 with a history of exposure to risk factors such as tobacco smoke, even in the absence of symptoms. (5) In our study, compliance with the use of spirometry was better for those patients seen by the pulmonologists; 40% of patients with the diagnosis of COPD followed by generalists compared with 98% of patients seen by pulmonologists, had spirometry performed. A recent study (12) evaluating the diagnostic methods used by primary care and pulmonary physicians for the diagnosis of COPD showed that in 898 subjects, spirometry was available in 49% of patients evaluated by the primary care physicians compared with 98% for the pulmonary group. In another study, Decramer et al (10) conducted a survey among general practitioners and pulmonologists regarding management of COPD and adherence to the GOLD guidelines. Again, fewer general practitioner performed spirometry and both general practitioners and pulmonologists did not prescribed enough pharmacotherapy for smoking cessation, 35% and 46% respectively. In Buffels et al article (13) they suggest that spirometry in general practice for early detection of COPD is feasible, provided that the generalist are instructed and trained in the use of a hand-held spirometer. The accuracy of their measurements was found to be highly acceptable.

The GOLD and ATS guidelines promote prevention of COPD in at-risk patients through smoking cessation efforts and by avoiding risk factors. In addition, influenza and pneumococcal vaccine are recommended in order to reduce serious illness in patients with COPD. In our study, generalists fared better regarding counseling in smoking cessation and vaccine administration, when compared with pulmonologist, but the difference did not reach statistic significance.

A similar proportion of patients receiving LABA in the sub specialist group were also prescribed ICS at a time when there were no clear guidelines regarding their use. It is not clear if this was due to awareness of recent publications or personal experience. An important concern with bronchodilator use is patient adherence to therapy; patients being followed by pulmonologists had a tendency to be more compliant with medication use.

There are limitations to this study. First, we did not attempt

to evaluate the level of education of the patients in each group, as patients with higher education may be more likely to seek care by specialist. Second, we looked only at patients followed by primary care physician; we do not know the care provided by other type of generalist like family practitioners. Third, our study was conducted at the beginning of 2001 and 2002; there may not have been sufficient time, especially for generalists, to become familiar and to implement the COPD guidelines in their practice compared with pulmonologist. Fourth, we recognize the limitations of a retrospective study and the inclusion of patients with no spirometry, some of the patients being treated for COPD could have been misdiagnosed. However, the value of including all the patients with the diagnosis of COPD allowed us to evaluate the reality of the practice of medicine in an urban area that depends on our teaching hospital for health care, there is no office spirometers in any of the primary clinic setting and the access to spirometry could have been limited by the waiting time in the main hospital.

Based on the GOLD guidelines as a standard for the care of COPD patients, this study suggests that there is room to improve the quality of COPD care in our inner city population.

Although there have been considerable gains in terms of tobacco-control programs and other efforts to protect respiratory health, COPD remains a major cause of morbidity, mortality and disability in the United States. If the burden of this disease is to be reduced over the coming years, it will be essential to develop strategies to increase the awareness and education, not only of the primary care physicians, but of the patients, regarding guidelines for the diagnosis and management of COPD. Increasing the use of pulmonologists as the sole care provider for COPD patients is not feasible. Patients with/or at risk for COPD will greatly benefit from an integrated approach, whereas the specialist will complement or reinforce what the generalist has initiated.

## **CORRESPONDENCE TO**

Gilda Diaz-Fuentes MD Division of Pulmonary, Bronx Lebanon Hospital Center, New York Mailing address: 1650 Grand Concourse, Bronx, New York 10457 E-mail: gdf.gdfuentes210@verizon.net Phone: (718) 518 5420 Fax: (718) 518 5704

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**Author Information**

**Gilda Diaz-Fuentes, MD, FCCP**

Attending, Division of Pulmonary Medicine, Bronx Lebanon Hospital Center

**Varadajalu Lakshmi, MD**

Pulmonary Fellow, Division of Pulmonary Medicine, Bronx Lebanon Hospital Center

**Steve Blum, Ph.D.**

Epidemiologist, Department of Medicine, Bronx Lebanon Hospital Center

**Stanley Sy, MD**

Pulmonary Fellow, Division of Pulmonary Medicine, Bronx Lebanon Hospital Center

**Elsa Escalera, MD**

Attending, Attending Community Healthcare Network