

White paper on expanding the role of pharmacists in chronic obstructive pulmonary disease

American Pharmacists Association Foundation

Abstract

Objectives: To (1) generate discussion about the role of the pharmacist in supporting patients with chronic obstructive pulmonary disease (COPD), (2) provide practical recommendations on how pharmacists can work with employers and other health care providers to improve patient outcomes, and (3) develop a pharmacist-based service offering for patients with COPD.

Data sources: Literature review and survey information provided by a group of national stakeholders who participated in a roundtable discussion.

Summary: COPD is currently the fourth leading cause of death in the United States, and incidence rates have been increasing. COPD is estimated to affect 24 million American adults, with almost one-half remaining undiagnosed. If current trends continue, COPD is predicted to become the third leading cause of death and fifth leading cause of morbidity in the United States by 2020. This will cause a dramatic increase in use of health care resources, which is projected to reach annual total costs of \$49.9 billion in 2010. Roundtable participants uniformly agreed that based on current and projected statistics, COPD is a major health concern. To address this growing concern, emphasis should be placed on the collaborative efforts of the health care community to become active in the detection, assessment, treatment, and management of patients with COPD and that pharmacists can contribute to each of these areas considerably.

Conclusion: Access in the community (often 24 hours a day, 7 days a week) combined with extensive clinical knowledge makes pharmacists uniquely capable of helping those with chronic disease, especially patients with COPD who require monitoring and encouragement throughout their lifelong treatment.

Keywords: Chronic obstructive pulmonary disease, pharmacy services, medication therapy management, collaborative practice, American Pharmacists Association Foundation.

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The American Pharmacists Association (APhA) Foundation invited a group of national stakeholders to a roundtable discussion on the collaborative role of community pharmacists in managing chronic obstructive pulmonary disease (COPD) (Appendix 1). The group convened on October 22–23, 2009, in Arlington, VA, with participants including representatives from patient advocacy, health plans, and academia, as well as health care providers. The meeting was supported by Boehringer Ingelheim Pharmaceuticals. This white paper is intended to serve as a starting point for involving pharmacists more fully into the care and education of individuals with COPD, with a goal of improving their productivity, quality of life, and overall health care costs.

Scope of the problem

The Global Initiative for Chronic Obstructive Lung Disease (GOLD) issued an updated report in 2009, *Global Strategy for the Diagnosis, Management, and Prevention of COPD*, which defines COPD as a preventable and treatable disease characterized by irreversible airflow limitation that is usually progressive and associated with an abnormal inflammatory response of the lung to noxious particles or gases. COPD is suspected when a person, usually older than 40 years, presents with symptoms including chronic cough, chronic sputum production, or dyspnea. The latter is the most typical reason for presentation for care, and spirometry showing a forced expiratory volume in 1 second (FEV_1)–to–forced vital capacity (FVC) ratio less than 0.70 is the only way to establish a diagnosis of COPD.¹

COPD also is linked to considerable extrapulmonary effects, including nutritional abnormalities, weight loss, and skeletal muscle dysfunction, which may contribute to severity in individual patients. Myocardial infarction, angina, osteoporosis, respiratory infection, bone fractures, depression, diabetes, sleep disorders, chronic anemia, and glaucoma often are seen at higher rates among individuals with COPD.¹ Whether these comorbidities are a result of COPD or develop secondary to smoking or aging is unclear. Regardless of the origin, all comorbid conditions amplify the disability associated with COPD and can complicate disease management.

COPD is currently the fourth leading cause of death in the United States, and incidence rates are increasing.² Of the six leading causes of death in the United States, only COPD has been steadily increasing since 1970.³ Decreases or steady rates of occurrence have been observed for heart disease, cancer, stroke, and diabetes from 1950 to 2006, but COPD death rates sustained a steadily increasing incidence until they reached a plateau in the late 1990s.² COPD is estimated to affect 24 million American adults, with almost one-half of those remaining undiagnosed.² If current trends continue, COPD is predicted to become the third leading cause of death and fifth leading cause of morbidity in the United States by 2020.¹ This will cause a dramatic increase in use of health care resources, which is projected to reach annual total costs of \$49.9 billion in 2010.²

Increased exposure to major modifiable risk factors such as tobacco smoke, occupational exposures, and air pollution have led to changes in COPD population demographics that may be linked to the increased incidence of the disease.¹ Although COPD often

is stereotyped as an “old man’s disease,” current statistics show that more than one-half of patients are younger than 65 years and that the COPD death rate is increasing more quickly for women than for men.^{4,5} In 2000, the number of women dying from COPD surpassed men dying from COPD.⁶ Tobacco smoke, specifically an increase in cigarette smoking, is deemed the most important contributing factor for these trends.⁵ With at least 15–20% of smokers diagnosed with COPD and many more remaining undiagnosed, that tobacco smoke accounts for almost 85% of all COPD cases is not surprising.^{1,4}

COPD also is caused by a genetic condition related to deficiency of alpha-1 antitrypsin.¹ At least 100,000 people in the United States are believed to have alpha-1 antitrypsin deficiency.⁷

COPD is an irreversible and progressive disease. However, minimizing risk factors and properly using medications can slow the progression and give individuals with COPD a better quality of life.¹ Chronic airway disease has been described as “10% medication and 90% education.”⁸ Pharmacists are named in the GOLD report as key health care professional collaborators in decreasing patient risk and are well positioned to assist in the management of COPD through initiatives such as delivering smoking cessation messages and intervention.¹ A major challenge faced by individuals with COPD is that only 17% of patients with chronic disease achieve perfect medication adherence.⁹ This degree of adherence decreases when patients are required to master a specific technique (e.g., inhaler use) and as the amount of time they live with the disease increases.¹⁰ Individuals with COPD face both of these barriers, which seem to magnify the potential role of pharmacists as COPD patient educators.

To help minimize both the human and economic costs of COPD, the roundtable participants were asked to assess need and explore strategies for integrating pharmacists into community-based, collaborative efforts to improve the care and outcomes for patients with COPD. General ideas on potential roles included screening, performing early detection and frequent monitoring through spirometry, educating about medication therapy, discussing the importance of medication adherence and appropriate medication-taking behavior, assessing and teaching appropriate techniques for inhalation devices used to deliver medication, and presenting realistic expectations about the disease and its treatment. The full results of this discussion and the panel’s innovative ideas have helped shape the contents of this white paper.

Review of COPD

COPD is defined as “a preventable and treatable disease with some significant extrapulmonary effects that may contribute to the severity in individual patients. Its pulmonary component is characterized by airflow limitation that is not fully reversible. The airflow limitation is usually progressive and associated with an abnormal inflammatory response of the lungs to noxious particles or gases.”¹

Clinical guidelines do not define COPD in terms of chronic bronchitis or emphysema. Chronic bronchitis is the long-term swelling of the bronchioles and is defined as the presence of cough and sputum production for at least 3 months in each of 2 consecutive years and is often associated with airflow limitation. Emphyse-

sema is defined as destruction of the alveoli. The damage to the alveoli decreases the exchange of oxygen and carbon dioxide, leading to shortness of breath.¹ Chronic bronchitis and emphysema may be present in patients with COPD, but quantifying their contribution to the disease process is difficult. Of note, patients living with COPD usually have both chronic bronchitis and emphysema.⁴

Conditions classified as COPD include chronic bronchitis, emphysema, or both and the presence of airflow obstruction. Unremitting asthma also can be considered COPD. Chronic bronchitis, emphysema, and asthma are not considered COPD when airflow is not obstructed or the condition is reversible. Airway obstruction caused by pulmonary disease of known etiology, such as cystic fibrosis, also is not considered COPD.¹

Airflow limitation characteristic of COPD is associated with an abnormal inflammatory response of the lungs to inhaled particles. Other key pathogenic processes in COPD are oxidative stress and imbalance of proteinases and antiproteinases in the lungs, leading to abnormal gas exchange, mucous hypersecretion, pulmonary hypertension, and ultimately small airway fibrosis and alveolar destruction.¹

The primary symptoms of COPD are cough, sputum production, and dyspnea. As the disease progresses, these symptoms tend to increase in frequency and worsen, with dyspnea becoming the most problematic. Recurrent exacerbations are the greatest cause of morbidity, mortality, and diminished quality of life and are expected over the course of the disease.¹

Diagnosis of COPD

Diagnosis of COPD requires spirometry. Spirometry measures the amount of air a person can breathe out and the time taken to do so. FVC is the volume of air that can be forcibly exhaled after an initial maximal inspiration. FEV₁ is the volume of air exhaled during the first second of the maneuver; it is a measure of how quickly the lungs can be emptied. FEV₁ is influenced by age, gender, height, and ethnicity and is usually evaluated as a percentage of the predicted normal value. Lower percentage predicted FEV₁ values correlate with poorer patient diagnosis.¹

The ratio of FEV₁ to FVC is a specific index of airflow limitation. The normal FEV₁-to-FVC ratio range is 0.7 and 0.8 in adults, and in COPD the ratio is less than 0.7. After a diagnosis of COPD has been established, the FEV₁ value is used to stage the severity of the disease.¹

The four stages of COPD severity that can be classified by spirometry are shown in Table 1.¹

Needs of individuals with COPD

To focus the discussion, roundtable participants completed a pre-meeting survey. Roundtable participants were asked to identify the most pressing needs for patients with COPD and their caregivers. Although many areas of need exist, the participants identified what they believed to be the three thematic areas: (1) education about the disease and its prevention, (2) timely diagnosis, and (3) appropriate treatment.

Education about the disease and its prevention

The roundtable participants felt that although COPD has been rec-

ognized for many years, the level of awareness and understanding about the disease in the general population is inadequate. Many patients believe that the symptoms of COPD, particularly coughing and difficulty in exercising or daily activities because of shortness of breath, are part of the aging process.¹ It also is believed that the number of people in the United States who have COPD but don't know it equals the number of patients with a diagnosis of COPD.² Part of the important educational message for patients should relate to the contributions of smoking and secondhand smoke, as well as exposure to occupational dust and chemical irritants, in COPD development. Participants expressed that educational messages about the disease need to span the continuum from prevention, screening, cause, treatment, prognosis, and daily-living strategies. Special emphasis was placed on the promotion of smoking cessation activities, given that smoking is the most common cause of COPD. The final point made by the group was that educating health care providers was needed to increase diagnosis rates and better manage the disease.

Timely diagnosis

A timely diagnosis of COPD leads to early intervention, which can help improve patients' quality of life. Spirometry screening has been identified as instrumental in diagnosing patients and is supported by evidence-based guidelines.¹

The roundtable participants commented that spirometry technology has improved greatly and is considerably more portable than earlier devices. With those advances, screening should be promoted through health fairs, in the workplace, and in pharmacies with symptomatic populations. Adding spirometry to biometric screening panels, particularly in at-risk populations, also was suggested. Because pharmacies are located in virtually every community, those locations represent an accessible option for patients, and the services could be provided in conjunction with local patient groups.

Appropriate treatment

An important part of appropriate treatment is adequate diagnosis. After proper diagnosis occurs, the GOLD goals for the appropriate treatment and management of COPD are as follows:

- Relieve symptoms
- Prevent disease progression
- Improve exercise tolerance
- Improve health status
- Prevent and treat complications
- Prevent and treat exacerbations
- Reduce mortality
- Prevent or minimize adverse effects of treatment

Management of stable COPD includes pharmacologic therapy, immunizations, and nonpharmacologic treatments.¹ Step-up therapy includes the following¹:

- All patients: Smoking cessation, risk factor avoidance, and influenza vaccination; pneumococcal vaccination for patients 65 years or older or younger than 65 years with an FEV₁ less than 40% predicted.
- Stage I (mild): Add short-acting bronchodilator as needed for symptoms.
- Stage II (moderate): Add regular treatment with one or more

Table 1. Four stages of COPD that can be classified by spirometry

Stage I (mild) FEV ₁ /FVC <0.70 FEV ₁ ≥80% predicted
Stage II (moderate) FEV ₁ /FVC <0.70 50% ≤FEV ₁ <80% predicted
Stage III (severe) FEV ₁ /FVC <0.70 30% ≤FEV ₁ <50% predicted
Stage IV (very severe) FEV ₁ /FVC <0.70 FEV ₁ <30% predicted or FEV ₁ <50% predicted plus chronic respiratory failure ^a

Abbreviations used: COPD, chronic obstructive pulmonary disease; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity.

^aDefined as PaO₂ <60 mm Hg with or without PaCO₂ >50 mm Hg breathing air at sea level.

long-acting bronchodilators; add rehabilitation.

- Stage III (severe): Add inhaled glucocorticosteroids if exacerbations are repeated.
- Stage IV (very severe): Add long-term oxygen if chronic respiratory failure is present; consider surgical intervention.

Potential roles for pharmacists in assisting patients with COPD

The roundtable participants addressed potential roles for pharmacists in assisting patients with COPD. The discussion drew upon participants' actual practice experience and areas in which they believed pharmacists could make an impact. These discussions also were informed by guidelines for appropriate management and treatment of COPD.

The top three roles for pharmacists identified by the panel were (1) improving adherence and compliance to medication regimens; (2) incorporating pharmacists into support groups, education programs, and smoking cessation programs; and (3) providing medication regimen reviews.

Improving adherence and compliance to medication regimens

For many chronic diseases, including COPD, adherence to long-term therapy only averages about 50% and often decreases over time.¹¹ Given that medications are one of the primary tools in treating and managing COPD, medication adherence and compliance can play a critical role in determining patient outcomes. The terms adherence, compliance, and persistence often are confused and sometimes used interchangeably. Adherence refers to the extent to which patients follow instructions for prescribed treatments. Compliance describes whether patients are taking medications as directed and often is used interchangeably with adherence. However, compliance is not the preferred term because it does not convey a sense of partnership between patient and prescriber.¹¹ Persistence conveys that patients are continuing to use

medications and refill prescriptions until instructed otherwise.¹⁰

Several medication use issues can create challenges for patients with COPD. Factors that contribute to nonadherence include¹¹:

- Denial of the severity of illness.
- Limited appreciation of the value of drug therapy.
- Adverse effects or concerns about adverse events.
- Concern about becoming drug dependent.
- Media influence of safety issues with certain drugs.
- Lack of confidence in the ability to follow medication regimens.
- Lack of positive motivation and incentives to changes behavior.
- Worries about the social stigma associated with taking medications.

Mastering the proper technique for inhaler devices, which are an important component of COPD treatment, can be challenging for patients with COPD. Often, patients will be prescribed multiple medication inhalers and therefore required to learn a variety of techniques.⁸ Patients need to be reassessed on how they use their medication inhalers and educated on the proper maintenance and cleaning of the delivery devices. Generating sufficient inspiratory flow rates for successful use of dry-powder inhalers is another challenge for some patients.⁸

Patients with COPD often have complex medication regimens because of common comorbidities such as diabetes, heart disease, sleep disorders, depression, anemia, and glaucoma.

Pharmacists, because of their education, training, and accessibility, are well positioned to identify and assist patients with adherence issues. Technical interventions include reviewing the number of doses a patient must take each day, assessing pill burden, and making recommendations for changes. Those changes can include the use of single daily dose medications and/or combination products. Affordability also is an issue for patients, and pharmacists can assist in that area by suggesting combination products, generic options, and patient assistance programs.

Pharmacist also can help patients with adherence issues through behavioral interventions that use cues, reminders, and reinforcement such as linking medication taking with certain daily activities and other adherence aids.

Incorporating pharmacists into support groups, education programs, and smoking cessation programs

Educational interventions are aimed at teaching patients about the wide range of topics needed to manage all aspects of their disease. Pharmacists can add to the collective efforts of other health care providers and patient advocacy groups because of their general understanding of the disease and expertise in the proper use of medications, durable medical equipment, and therapeutic options. The location of pharmacies in most communities also allows pharmacists to assist with distributing awareness and educational materials.

Because inhaled medications are critical in managing COPD, the development of educational interventions related to the proper use of inhalers also is an area in which pharmacists can contribute. Important areas include administration techniques, assess-

ing the amount of medication remaining, proper cleaning methods, and the appropriate time to use medications.

The GOLD report names pharmacists as one of the key health professionals for delivering smoking cessation messages and interventions. Although some pharmacists may offer comprehensive smoking cessation services, all pharmacists should advocate and reinforce the importance of smoking cessation with each patient visit. Pharmacotherapy has been shown to increase long-term abstinence rates, and patients who are attempting to quit should be encouraged to use first-line pharmacotherapies for smoking cessation.¹

Roundtable participants noted the importance of incorporating the concept of “lung age” into discussions with patients who smoke. Spirometry is a measure of lung function, and many health professionals use the results of spirometry testing to help convince smokers to quit. Rather than tell patients that their lung function has been reduced to a certain percent, the concept of lung age translates that decreased function into an age-related metric.¹² For example, a health care provider may tell a 50-year-old patient that they have the lung function of an 80 year old. Research published in the *British Medical Journal* concluded that telling smokers their lung age significantly improves the likelihood of them quitting smoking.¹²

Providing medication regimen reviews

Medication therapy reviews and medication therapy management (MTM) are valuable services that pharmacists can provide to all patients, not only those with COPD. MTM is a systematic process during which medication therapy is reviewed and the pharmacist accomplishes the following¹³:

- Collecting patient-specific information
- Assessing medication therapies
- Identifying, listing, and prioritizing medication-related problems
- Developing a plan to resolve medication-related problems

In addition to providing a list of medication-related problems and developing a plan to resolve them, the pharmacist educates patients about their condition and treatment, which can empower them to self-manage their condition.¹³

In the core elements model of MTM, the medication therapy review can be general or targeted to a specific patient issue. An annual review to assess the patient’s current medications, including prescription and nonprescription medications, herbal remedies, and dietary supplements, is recommended. After a baseline assessment is conducted and a plan established, a targeted assessment of specific problems that arise is possible in the context of the patient’s complete medical and medication history.¹³

Examples of problems identified through targeted medication regimen reviews include inhaler technique, inhaler care and storage, suboptimal therapy, issues of nonadherence, and inappropriate use of nonprescription medications.¹³

Challenges to pharmacist involvement

The roundtable participants discussed potential challenges to advancing the collaborative role of the community pharmacist in managing COPD.

Pharmacist training

The roundtable participants believed that the current training of pharmacists prepares them to deliver patient services. However, they also acknowledged that to optimize the integration of pharmacists into a collaborative care process for patients with COPD, additional training would be beneficial. Appropriate training allowing pharmacists to deal with issues related to COPD directly would include screening, pharmacotherapy management, communication strategies with other health care providers, respiratory care, and information about spirometry. The most direct way to address this challenge is for schools and colleges of pharmacy, as well as professional associations, to develop and offer timely and practical continuing pharmacy education programs. These programs would provide the necessary clinical information to care for individuals with COPD and cover the important topic of providing support to family and other caregivers. In addition to pharmacist-specific educational forums and materials, pharmacists should consider attending programs offered to the broader health care community to facilitate learning in a multidisciplinary environment. As with any team approach, understanding each team member’s role and value they bring to the patient and each other is a critical factor for success.

Other suggestions for education and training opportunities for pharmacists included:

- Refining the pharmacy curriculum to reflect the increasing prevalence and impact of COPD on the health care system.
- Integrating recognition and management of the signs and symptoms of COPD into student pharmacist practice labs.
- Identifying pharmacist mentors who can support students and pharmacists as they provide care for these patients.

The participants noted that costs associated with the time and training needed to address specific needs of patients with COPD should be recognized. Reimbursement for clinical services is a challenge that will need to be addressed, according to the roundtable.

Reimbursement mechanisms

Unfortunately, consistent reimbursement mechanisms that facilitate the full expansion of in-depth pharmacist interventions for patients with COPD do not exist currently.

Collaborative practice

Roundtable participants agreed that face-to-face collaboration between and among health care providers and patients was highly desirable. That type of care integration works well in the group practice setting because of the physical proximity of the providers. However, in a network model, it is much more challenging, not only because of the physical separation that exists but also because of the lack of universal electronic medical records. This led to a discussion of the next challenge: health information technology integration.

Health information technology integration

If pharmacists are going to participate more fully in patient care, one important limiting factor is the lack of standardization for documentation and billing for pharmacist services. The lack of interoperability among technology systems, software, and sys-

tem platforms is a barrier to providing optimal patient care. The profession of pharmacy has considerable experience in building technology solutions for product transactions, and this experience needs to be translated to patient care services. Consensus will need to be reached on minimum data sets in the areas of clinical documentation, billing, and quality improvement.¹⁴

Practice model development

Roundtable participants endeavored to design a patient care delivery model that would more fully integrate pharmacists into the care process for patients with COPD, while taking into account the opportunities and challenges discussed earlier. To construct the model, results of successful practice-based research conducted by the APhA Foundation were reviewed. Summaries of that work included the following:

- In the landmark Project ImPACT: Hyperlipidemia study, patients achieved medication persistence and adherence of 93.6% and 90.1%, respectively, while 62.5% achieved National Cholesterol Education Program goal during a 24.6-month period.¹⁵
- The Asheville Project, which received publication support from the APhA Foundation, demonstrated long-term improvements in clinical and economic outcomes in community pharmacy-based programs.^{16,17}
- Project ImPACT: Osteoporosis—a regional osteoporosis screening, referral, and monitoring program—demonstrated the impact that community pharmacists can have in identifying and referring at-risk patients to physicians for appropriate diagnosis and intervention.¹⁸
- The Patient Self-Management Program for Diabetes provided evidence that the clinical, humanistic, and economic outcomes in Asheville could be achieved with five different employers through pharmacist use of the APhA Foundation's structure and process model for collaborative care.¹⁹
- The Diabetes Ten City Challenge has produced economic, clinical, and humanistic outcomes that demonstrate the scalability of a multisite, community pharmacy-based, interdisciplinary care model.²⁰

The roundtable worked to build on past research efforts and develop a program that would align incentives for all stakeholders. The objective is to design an employer/plan-funded, collaborative health management program using community-based pharmacist coaching, evidenced-based COPD care guidelines, and self-management strategies designed to keep patients with COPD healthy and productive.

An overarching goal in designing this care model would be to continue the work of the APhA Foundation to fundamentally change the way chronic disease is managed and paid for through a value-based benefit design model. The model depicted in Figure 1 uses an enhanced benefit/incentive structure for participants related to obtaining COPD medications and the educational services of a pharmacist essential to managing the disease. The Milken Institute stated the following: "Employers, insurers, governments and communities need to work together to develop strong incentives for patients and health care providers to prevent and treat chronic disease effectively."

The care model

The COPD model shown in Figure 1 is a patient-focused collaboration among employers, their covered health plan beneficiaries, and a specially trained community pharmacist who provides face-to-face counseling sessions during which participants learn to manage their COPD and other chronic conditions (e.g., diabetes, high blood pressure, dyslipidemia) and reduce associated health risks and their subsequent costs. The model is designed to complement and reinforce existing health care team provider roles, including the patient's primary care provider. In addition, the program establishes a value-based benefit model that aligns incentives for employers, patients, and providers.

The value proposition

The discussion of value in health care has been gaining attention in the previous few years. Generally, value can be defined as the health outcomes achieved in relation to dollars spent in providing those services. When considering management of chronic disease, outcomes may include short- and long-term measures, including mortality, complications, or other illness. According to a recent article by Porter et al.,²¹ "Value (outcomes and costs) can only be reliably measured over the full cycle of care, rather than for a discrete procedure or intervention (e.g., drugs, hospital stays, tests). Measuring and reporting outcomes and costs in a piecemeal fashion, as is the practice today, only encourages poorly coordinated care and cost shifting." This message has not been lost on the insurance industry and employer groups that have sought ways to implement value in their benefit designs. The value-based insurance design (VBID) approach has emerged; it proposes to align incentives by developing copayment rate structures that drive the use of higher value services while discouraging the use of lower value services.

In practice, two general approaches to VBID exist. One approach established more favorable copays for high-value services (such as immunizations), while the other targets incentives for patients with a specific clinical diagnosis or chronic disease. One example of the second type of benefit design approach is waiving copays for high-value medications for patients with diabetes. The Asheville Project, Patient Self-Management Program for Diabetes, and Diabetes Ten City Challenge are examples of the second approach.

A key element of implementing a value-based benefit design is restructuring of financial incentives. This is consistent with the message by the Commonwealth Fund Report, *Toward a High Performance Health System for the United States*. The report states, "It is clear that the nation needs to shift from paying for units of services provided to paying for the best achievable outcomes and most effective care over the course of treatment."²²

Interestingly, the value-based benefit design is consistent with the chronic care model of Wagner et al.²³ The authors state, "High-quality chronic illness care is characterized by productive interactions between the practice team and patients that consistently provide the assessments, support for self-management, optimization of therapy, and follow-up associated with good outcomes."

The incentives must be aligned within a comprehensive and collaborative model of care. The roundtable participants believed

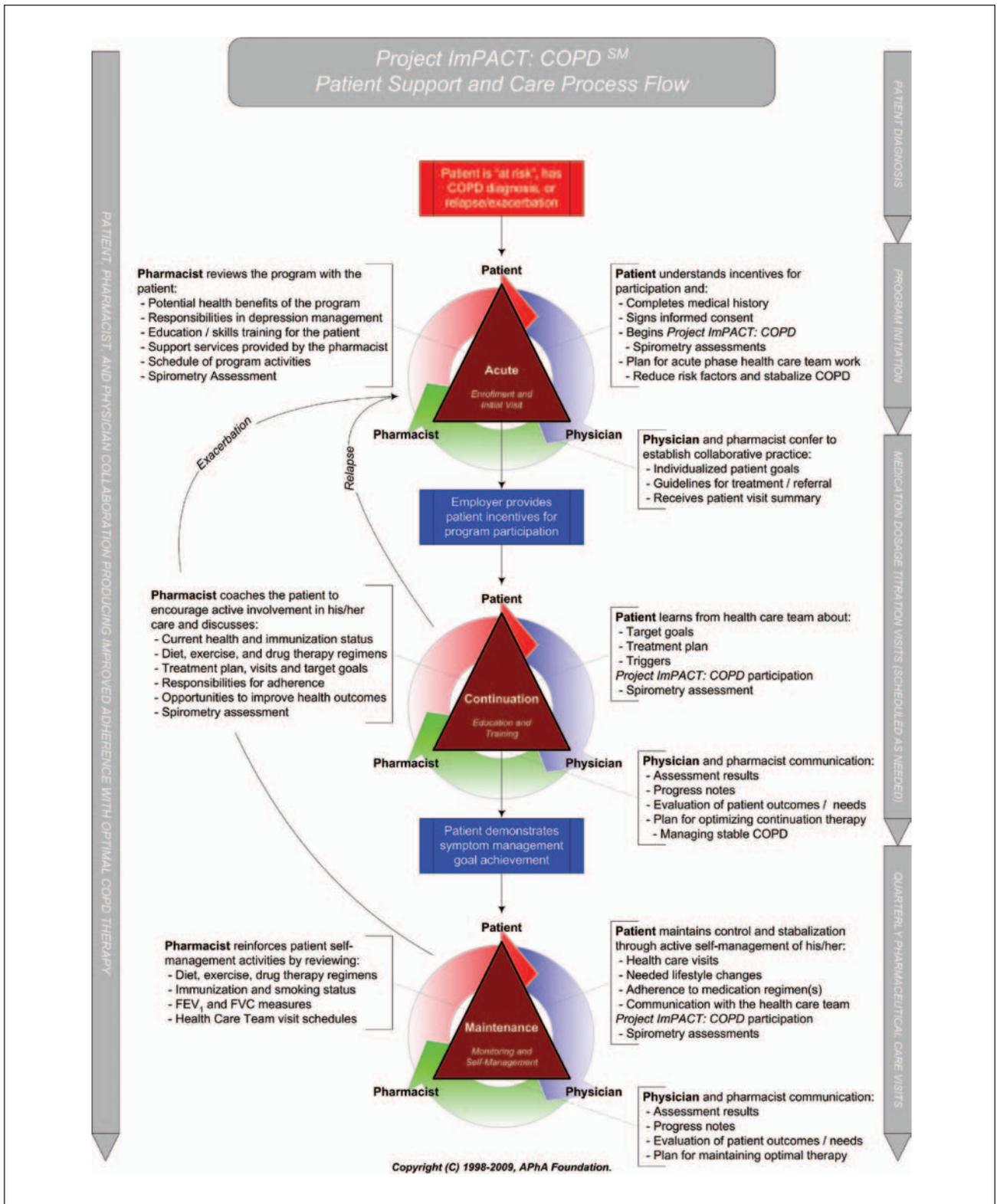


Figure 1. Project ImPACT: COPD: Patient support and care process flow
 Abbreviations used: COPD, chronic obstructive pulmonary disease; FEV₁, forced expiratory volume in 1 second; FVC, forced vital capacity.

that the COPD patient self-management program, in both its process of care and business model, supports key elements of these recommendations for a value-based benefit that provides high-quality chronic illness care.

The COPD patient self-management model depicted in the current white paper:

- Creates a collaborative team of employers, employees, pharmacists, physicians, and other providers and aligns incentives to focus on wellness, patient self-management, and workplace cost savings.
- Educates and supports employees with information and guidance to become active participants in managing COPD based on a proven model and demonstrated research outcomes.
- Waives copays on medications or provides other incentives to encourage active engagement in self-care.
- Creates opportunities for employees (or dependent beneficiaries) to meet with pharmacists to discuss their care and learn new ways to monitor and control their disease.
- Centers care around the patient and positions pharmacists as accessible, valuable resources in helping patients understand and control COPD.
- Reduces unscheduled absenteeism in the workplace and associated costs.
- Improves health outcomes as measured by key indicators.
- Saves health care dollars by investing in patient well-being (i.e., keeping people healthy rather than paying for care when they become seriously ill).

How the program works

Specially trained community pharmacists are assigned to “coach” patients on managing COPD, including setting goals, using medi-

cations properly, and tracking their condition consistently with recognized clinical indicators. Pharmacists communicate with physicians and other providers regarding the patient encounters. Pharmacist providers are compensated for their patient visits. In previous models, employees chose to participate in the program through a voluntary benefit offered by their employer and agreed to meet with the pharmacist. However, the roundtable felt that an opt-out approach was preferred to an opt-in approach to help increase program participation. Patients work with their pharmacist through a structured series of visits that focus on knowledge, skills, and performance. These assessments are designed to help providers understand the area(s) in which patients required additional education. Pharmacists then record clinical data. Figure 2 details this continuum of care.

Conclusion

COPD is currently the fourth leading cause of death in the United States, and incidence rates are increasing. COPD is projected to result in \$49.9 billion in health care-related costs in 2010. However, COPD often is overlooked and undertreated despite the availability of several evidenced-based therapies and interventions. Medications are an important tool in managing the disease, making adherence critically important for patients with COPD. Despite the challenges that exist in the health care system, pharmacists are well positioned to perform medication- and wellness-related interventions that can improve patient outcomes. Because of these potential contributions to improving outcomes for patients with COPD, innovative approaches to fully integrate pharmacists into the COPD care team need to be developed, with investment on the part of all stakeholders.

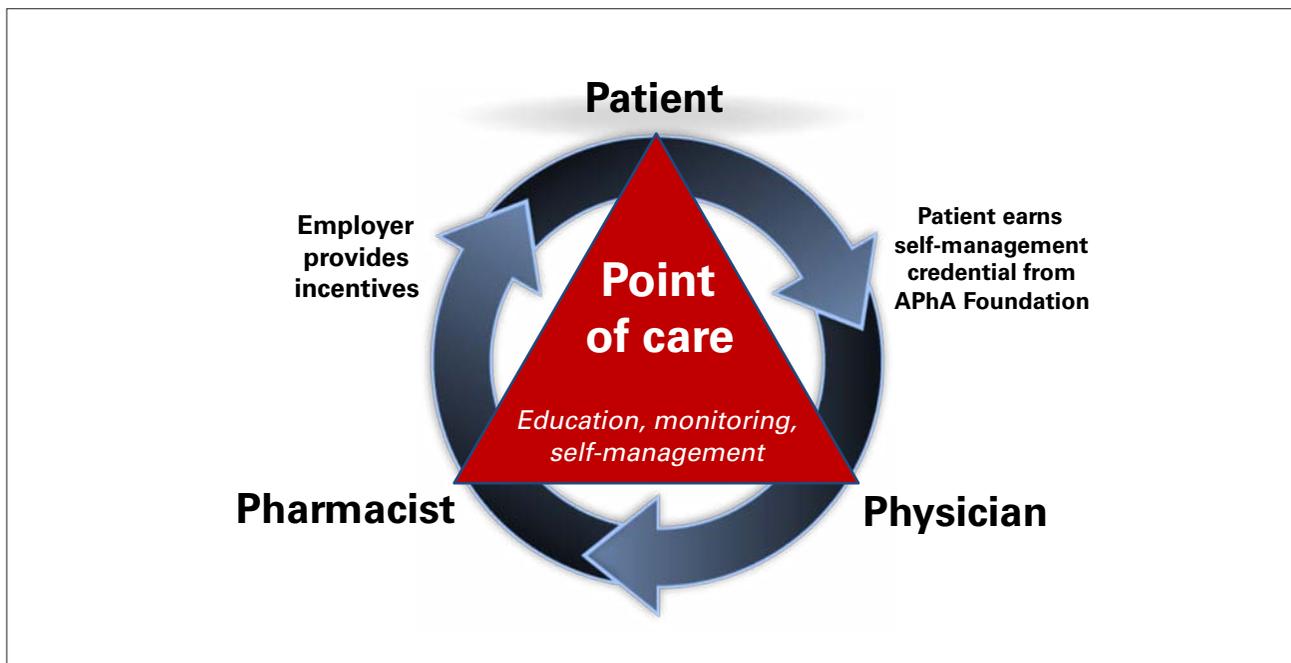


Figure 2. Project ImPACT: COPD: Stakeholder continuum
Abbreviations used: COPD, chronic obstructive pulmonary disease.

Appendix 1. Members of roundtable to discuss expanding the role of pharmacists in chronic obstructive pulmonary disease

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References

- Global Initiative for Chronic Obstructive Lung Disease. Global strategy for diagnosis, management, and prevention of chronic obstructive pulmonary disease. Washington, DC: Medical Communications, Inc.; 2009.
- National Heart, Lung, and Blood Institute. Morbidity and mortality 2007 chartbook on cardiovascular, lung, and blood disease. Bethesda, MD: National Heart, Lung, and Blood Institute; 2009.
- Jemal A, Ward E, Hao Y, Thun M. Trends in the leading causes of death in the United States, 1970-2002. *JAMA*. 2005;294:1255-9.
- Grady D. From smoking boom, a major killer of women. Accessed at www.nytimes.com/2007/11/29/health/29lung.html?_r=1&oref=slogin, January 4, 2011.
- Centers for Disease Control and Prevention. Chronic obstructive pulmonary disease (COPD). Accessed at www.cdc.gov/copd, January 4, 2011.
- Mannino DM, Homa DM, Akinbami LJ, et al. Chronic obstructive pulmonary disease surveillance: United States, 1971-2000. Accessed at www.cdc.gov/mmwr/preview/mmwrhtml/ss5106a1.htm, January 4, 2011.
- American Thoracic Society, European Respiratory Society. American Thoracic Society/European Respiratory Society Statement: standards for the diagnosis and management of individuals with alpha-1 antitrypsin deficiency. *Am J Respir Crit Care Med*. 2003;168:818-900.
- Fink JB, Rubin BK. Problems with inhaler use: a call for improved clinician and patient education. *Respir Care*. 2005;50:1360-74.
- Osterberg L, Blaschke T. Adherence to medication. *N Engl J Med*. 2005;353:487-97.
- National Council on Patient Information and Education. Enhancing prescription medicine adherence: a national action plan. Accessed at www.talkaboutrx.org/documents/enhancing_prescription_medicine_adherence.pdf, January 4, 2011.
- World Health Organization. Adherence to long-term therapies: evidence for action. Geneva: World Health Organization; 2003.
- 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.
- American Pharmacists Association, National Association of Chain Drug Stores Foundation. Medication therapy management in pharmacy practice: core elements of an MTM service model (version 2.0). *J Am Pharm Assoc*. 2008;48:341-53.
- Millonig MK. Mapping the route to medication therapy management documentation and billing standardization and interoperability within the health care system: meeting proceedings. *J Am Pharm Assoc*. 2009;49:372-82.
- Bluml BM, McKenney JM, Cziraky MJ. Pharmaceutical care services and results in Project ImPACT: Hyperlipidemia. *J Am Pharm Assoc*. 2000;40:157-65.
- Cranor CW, Bunting BA, Christensen DB. The Asheville Project: long-term clinical and economic outcomes of community pharmacy diabetes care program. *J Am Pharm Assoc*. 2003;43:173-84.
- Bunting BA, Smith BH, Sutherland SE. The Asheville Project: clinical and economic outcomes of a community-based long-term medication therapy management program for hypertension and dyslipidemia. *J Am Pharm Assoc*. 2008;48:23-31.
- Goode JV, Swiger K, Bluml BM. Regional osteoporosis screening, referral, and monitoring program in community pharmacies: findings from Project ImPACT: Osteoporosis. *J Am Pharm Assoc*. 2004;44:152-60.
- Garrett DG, Bluml BM. Patient self-management program for diabetes: first-year clinical, humanistic, and economic outcomes. *J Am Pharm Assoc*. 2005;45:130-7.
- Fera T, Bluml BM, Ellis WM, et al. The Diabetes Ten City Challenge: interim clinical and humanistic outcomes of a multisite community pharmacy diabetes care program. *J Am Pharm Assoc*. 2008;48:181-90.
- Porter ME, Teisberg EO. Redefining health care frequently asked questions. Boston: Harvard Business School Publishing; 2006.
- Gauthier A, Schoenbaum SC, Weinbaum I. Toward a high performance health system for the United States. New York: Commonwealth Fund; 2006.
- Wagner EH, Austin BT, Davis C, et al. Improving chronic illness care: translating evidence into action. *Health Aff (Millwood)*. 2001;20:64-78.

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