

COPD:

The Increasing Role of the FP



Alan Kaplan, MD, CCFP(EM)

Presented at the Primary Care Today: Education Conference and Medical Exposition, Toronto, Ontario, May 2006.

Chronic obstructive pulmonary disease (COPD) is the second most common cause of morbidity in those > 40-years-of-age in Canada. How can you, as practitioners, make a difference? Early diagnosis can identify disease at a time wherein smoking cessation can prevent the disease from getting to the point where it causes morbidity and mortality. It is important to be aware that there are things that can be done for your patient with COPD at any stage of the illness.

The definitive diagnosis is made by objective measurement of lung function. This can be done by spirometry. The Global Initiative for Chronic Obstructive Lung Disease (GOLD) guidelines have defined COPD as being age-adjusted forced expiratory volume in one second (FEV1)/forced vital capacity (FVC) ratio of < 70%, (*i.e.*, the patient has obstruction that causes them to be unable to blow out > 70% of the total in the first second). This must occur



What is COPD?

COPD is a respiratory disorder largely caused by smoking, which is characterized by:

- progressive, partially reversible airway obstruction,
- systemic manifestations, as well as
- increasing frequency and severity of exacerbations.¹



How to diagnose COPD?

Smokers > 40-years-of-age should be the patients that you consider to have COPD. The Canadian Lung Association recommends the use of the Canadian Lung Health Test to assist you in choosing who should have definitive testing (Table 1).

Table 1

The Canadian Lung Health Test

If you are > 40-years-of-age and currently smoke cigarettes, or have smoked in the past, you may be at risk for developing chronic obstructive pulmonary disease (COPD) (also known as chronic bronchitis and emphysema).

If you are concerned about your lung health, take this quick test:

| | YES | NO |
|--|--------------------------|--------------------------|
| 1. Do you cough regularly? | <input type="checkbox"/> | <input type="checkbox"/> |
| 2. Do you cough up phlegm regularly? | <input type="checkbox"/> | <input type="checkbox"/> |
| 3. Do even simple chores make you short of breath? | <input type="checkbox"/> | <input type="checkbox"/> |
| 4. Do you wheeze when you exert yourself, or at night? | <input type="checkbox"/> | <input type="checkbox"/> |

Adapted from BreathWorks™ Help for People with COPD.

Table 2

COPD vs. asthma

| | Asthma | COPD |
|-------------------|-----------------------------|--|
| Age of onset | Usually < 40 years | Usually < 40 years |
| Smoking history | Not causal | Usually > 10 packs/year |
| Sputum production | Infrequent | Often |
| Allergies | Often | Infrequent |
| Disease course | Stable (with exacerbations) | Progressive worsening (with exacerbations) |
| Spirometry | Often normalizes | Never normalizes |

Adapted from BreathWorks™ Help for People with COPD.

post-bronchodilator and there cannot be significant improvement post-bronchodilator consistent with asthma. The severity of the COPD is based on the degree of FEV1 reduction globally. Canada has made treatment decisions based on the symptoms, rather than on the less-used lung function. The Canadian guidelines have defined COPD as also having an FEV1 < 80%, but this will be changed to bring Canada in line with the global guidelines (Table 2).

Q *What is the mechanism of dyspnea?*

Patients feel dyspneic because of the obstruction. But why do they feel better if the obstruction is, by definition, not reversible? By relieving some obstruction there is often a relief of air trapping. This decrease in hyperinflation allows the patient to take a deeper breath and relieves the sensation of dyspnea. You can try this yourself. While running, ensure that you slow your breathing down to give yourself a chance to exhale more completely and thus not hyperinflate.

Q *How to treat COPD?*

Smoking cessation

Not all smokers will develop COPD. There seem to be some people who are protected from the pulmonary effects of the smoking. For those who are affected, the pattern is very consistent, as shown by the work of Fletcher, *et al.*²

In Figure 1, you can see that susceptible smokers continue to lose lung function at an advanced rate. However, those who quit go back to a rate of loss closer to that of the regular population, thus delaying symptoms and mortality.

Smoking cessation must be approached systematically, with a review of the patient's readiness to change and thus targeted intervention. Aids for smoking cessation include:

- counselling,
- nicotine replacement,
- bupropion,
- nortriptyline and
- the upcoming agents of varenicline and endocannabinoids.

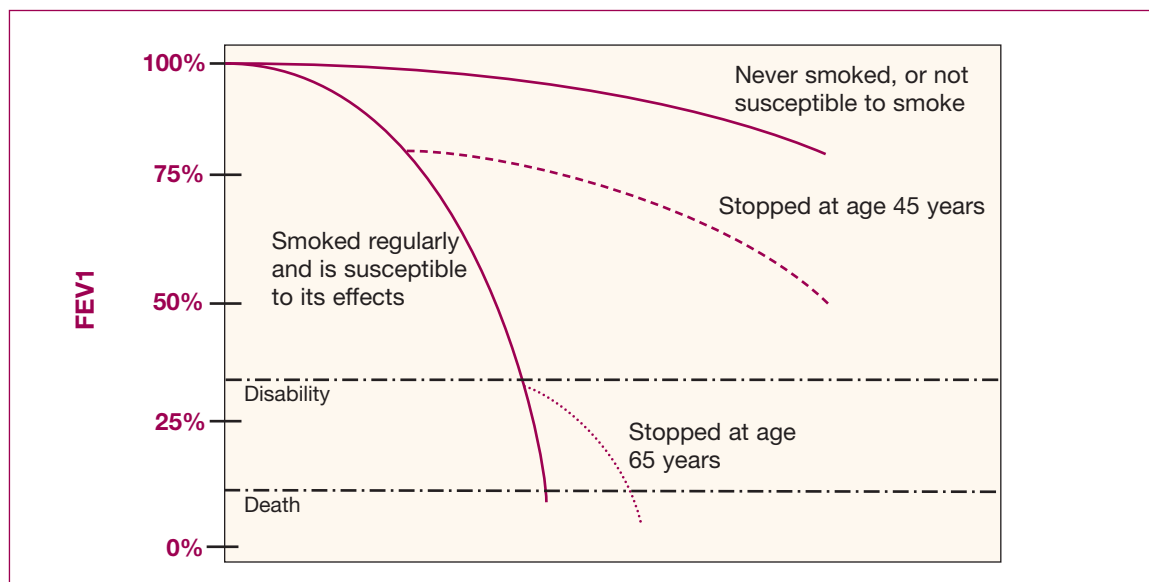


Figure 1. Effects of smoking and stopping smoking on forced expiratory volume in one second (FEV1). Adapted from BreathWorks™ Help for People with COPD.

Remember to ask about smoking every visit! The four As (steps) recommended by the National Cancer Institute are useful:

- Ask
- Advise
- Assist
- Arrange (follow-up)³

Pharmacotherapy

As mentioned, pharmacologic therapy decisions are based on symptoms. For those who have intermittent symptoms, only a short-acting bronchodilator is needed. For those who have persistent symptoms, a longer-acting bronchodilator would be beneficial. As the symptoms worsen, more bronchodilators

Dr. Kaplan is a Chairperson, Family Physician Airways Group of Canada, Board Member, International Primary Care Airways Group, Chair of CME, York Central Hospital and a Family Physician practicing in Richmond Hill, Ontario.

are added (Figure 2). Up until recently, physicians have felt that inhaled steroids have a place in preventing exacerbations. The recent, unpublished TOWARDS a Revolution in COPD Health (TORCH) study has shown some potential benefit in mortality in patients with COPD and with a FEV1 of < 60%.

Non-pharmacologic treatment

Patients with COPD develop a vicious cycle. As they become breathless, they become less active and decondition. People who develop social isolation then get depressed and malnutrition becomes a real risk.

As such, our most basic prescriptions are for good nutrition and exercise! There are formal pulmonary rehabilitation programs across Canada, but unfortunately, nowhere near in sufficient numbers. At the very least, please encourage progressive exercise to keep patients as fit and active as they could be.

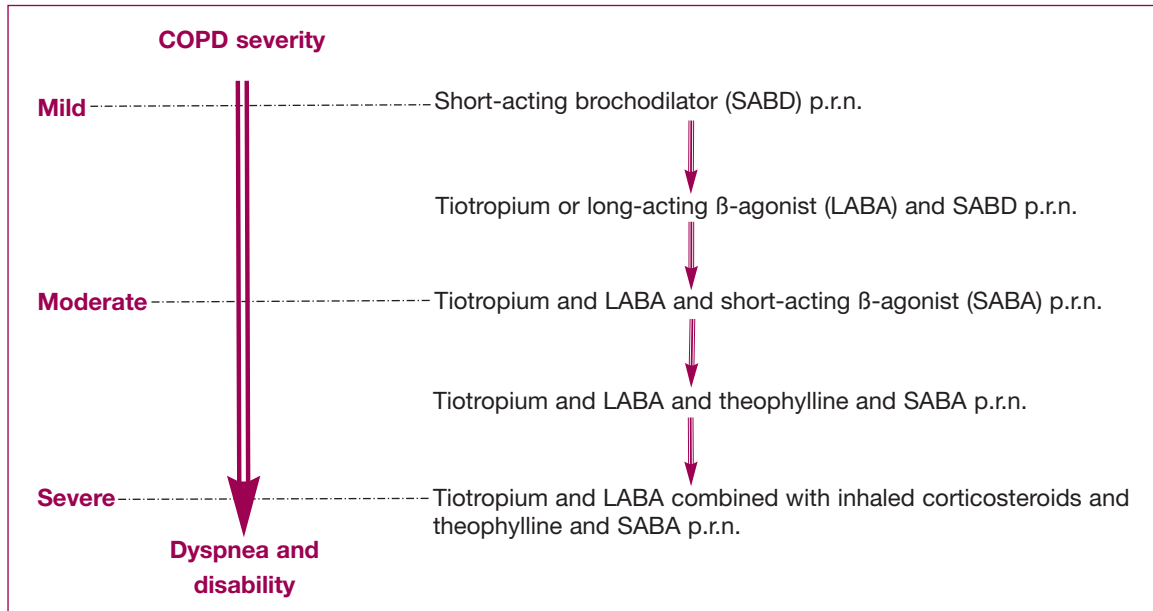


Figure 2. Pharmacotherapy treatment of COPD based on increasing symptoms and disability. Adapted from BreathWorks™ Help for People with COPD.

Simple things like teaching patients about breathing techniques can also be of value. Slowing breathing down to decrease hyperinflation works. Pursed-lip breathing and mechanisms to assist the diaphragm, like leaning forward, are also of benefit.

Oxygen

Oxygen reduces mortality during acute exacerbations and increases the life expectancy of patients with chronic respiratory failure. Oxygen is covered for eligible patients in those with partial pressure of oxygen in arterial blood (PaO_2) < 55%, or in those who have evidence of chronic hypoxemia, such as having polycythemia or cor pulmonale and who desaturate with exertion in those with a stable PaO_2 of 55% to 59%.

Q How to deal with exacerbations?

Prevention

Each exacerbation has the potential to worsen lung function and cause a more rapid progression of the disease; thus, prevention is very important. Long-acting bronchodilators improve one's quality of life, but have also been shown to decrease exacerbations.

Vaccinations with the influenza vaccine and pneumococcal vaccines are also effective in preventing exacerbations.

Treatment

Exacerbations may or may not be purulent. Management includes:

- maximizing bronchodilators,
- systemic steroids (which have been shown to increase the time to the next exacerbation) and

- antibiotics if there is the triad of increased:
 - sputum,
 - purulent sputum and
 - dyspnea.

Antibiotic choice is based on the likelihood of resistance. Factors to consider when deciding which antibiotics should be chosen include the following:

- antibiotic usage,
- prednisone usage,
- bad lung function,
- structural lung disease (*i.e.*, bronchiectasis) and
- comorbidities.

Q & **A** *How can the FP provide end of life care?*

Patients with severe COPD, especially with recurrent exacerbations and poor lung function have a significant mortality rate. Advanced COPD is a terminal disease and patients at that end of the spectrum need to have frank discussion for plans of future exacerbations. In addition, palliative services for advanced disease may be appropriate; this is another key role for the FP.

Q & **A** *Conclusion?*


All patients with COPD can be helped and, as the FP, there is a lot we can do. Make the diagnosis early so that smoking cessation can prevent morbidity. Be aggressive about preventing and treating exacerbations to prevent the further decline of lung function. Combine pharmacologic and non-pharmacologic therapies to assist the patient in maximizing their lung function and improve their quality of life. **Dx**

References


1. Canadian Thoracic Society recommendations for management of chronic obstructive pulmonary disease 2003. *Can Respir J* 2003; 10(Suppl A):11A-65A.
2. Fletcher C, Peto R: The natural history of chronic airflow obstruction. *Br Med J* 1977; 1(6077):1645-8.
3. Maheu, Marlene: Nicotine Freedom: Integrating the National Cancer Institute Model-“4As.” <http://www.selfhelpmagazine.com/articles/atd/atd4-as.html>.

Resources

1. Nichol KL, Baken L, Nelson A: Relation between influenza vaccination and outpatient visits, hospitalization and mortality in elderly persons with chronic lung disease. *Ann Int Med* 1999; 130(5):397-403.
2. Nichol KL, Baken L, Wuorenma J, et al: The health and economic benefits associated with pneumococcal vaccination of elderly persons with chronic lung disease. *Arch Intern Med* 1999; 159(20):2437-42.
3. Dusser D, Bravo ML, Iacono P: The effect of tiotropium on exacerbations and airflow in patients with COPD. *Eur Respir J* 2006; 27(3):547-55.
4. Aaron SD, Vandemheen KL, Herbert P, et al: Outpatient oral prednisone after emergency treatment of chronic obstructive pulmonary disease. *NEJM* 2003; 348(26):2618-26.



Cystic fibrosis takes the lives of more Canadian children than any other inherited disease. Hundreds of Canadian scientists are searching for a cure. For more information:



1-800-363-7711