Mild COPD: initial steps

Common questions asked by primary care practitioners

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Early implementation of evidence-based interventions in patients with mild chronic obstructive pulmonary disease (COPD) can improve outcomes for these patients. Questions often asked by GPs about the treatment of early and mild COPD are answered here.

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Chronic obstructive pulmonary disease (COPD) is an umbrella term for lung diseases with persistent airflow obstruction, including emphysema, chronic bronchitis and chronic asthma.[1]

In Australia, in men and women aged 40 years or older, the prevalence of COPD as confirmed by evidence of airflow obstruction that is not fully reversible with a bronchodilator is estimated to be 7.5% (the Burden of Obstructive Lung Disease [BOLD] Study).[2] COPD remains a leading cause of death and disease in Australia, ranking after heart disease, stroke and cancer.[2,3]

In mild COPD there is spirometric evidence of mild airflow obstruction (post-bronchodilator forced expiratory volume in 1 second [FEV_1] between about 60% and 80% predicted) and patients experience few symptoms.[1] However, patients are at risk of worsening symptoms, increased decline in FEV_1 and complications of their condition, in particular exacerbations.

GPs have an increasingly important role to play in managing patients with all levels of severity of COPD and its comorbidities. They are also particularly well placed to detect early and mild disease and to manage the risk factors associated with disease progression. This article discusses the management of patients with mild COPD using a question and answer format.

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Key points

- **COPD is a clinical diagnosis confirmed by spirometric evidence of airflow limitation that is not fully reversible.**
- **Early detection of COPD allows early intervention and the opportunity to improve outcomes.**
- **Treatment of COPD is based on severity of symptoms, severity of airflow obstruction and presence or absence of exacerbations.**
- **All smokers should be assisted to quit smoking.**
- **All patients with COPD should be vaccinated against influenza, and referral to pulmonary rehabilitation should be considered, even for those with mild disease.**
- **First-line pharmacotherapy for recently diagnosed mild COPD is a short-acting bronchodilator (reliever medication) on an as-needed basis. If symptoms persist or worsen, a long-acting bronchodilator may be added as maintenance therapy.**
- **Long-acting bronchodilators (either alone or in combination with a second class of bronchodilator) have been shown to improve symptoms, help extend exercise tolerance and prevent exacerbations.**
- **Comorbidities should be considered if symptoms of COPD outweigh objective findings.**

Question 1

COPD is classified as mild, moderate and severe. How do you differentiate between these? How and why is the Australian classification different from the global guidelines GOLD?

Answer

COPD is diagnosed when a patient has cough, breathlessness and/or wheeze in the setting of previous exposure to a noxious agent or agents (most commonly in Australia, cigarette smoke) and evidence of airflow obstruction on spirometry that is not fully reversible with a bronchodilator (i.e. post-bronchodilator ratio of FEV_1 to forced vital capacity [FEV_1/FVC] below 0.7 and FEV_1 below 80% predicted). The Thoracic Society of Australia and New Zealand/Lung Foundation Australia guidelines for the management of COPD (*The COPD-X Plan: Australian and New Zealand Guidelines for the Management of Chronic Obstructive Pulmonary Disease 2016*; available also in a concise form specifically for use in primary care, *COPD-X Concise Guide for Primary Care*) classify COPD as mild, moderate or severe based on the degree of airflow obstruction present and associated symptoms (Boxes 1 and 2).[1,4]

Classification according to severity of airflow obstruction is also the basis for the Global Initiative for Chronic Obstructive Lung Disease (GOLD) COPD descriptor categories, GOLD I to IV.[5] The COPD-X classification was developed in parallel with GOLD, and is similar. The general differences are that the COPD-X classification system is simpler than the current GOLD classification system and the COPD-X guidelines are updated more frequently (quarterly) and have a more locally relevant approach. Treatment strategies in each are based on similar parameters – that is, severity of airflow obstruction, severity of symptoms and presence or absence of exacerbations. Furthermore, each substantive change in GOLD is reviewed as COPD-X is updated.

The cut-points for defining severity according to levels of airflow obstruction are relatively arbitrary and vary slightly across guidelines, but it is important to note that severity of airflow obstruction has prognostic implications in patients with COPD. Nonetheless, categorising COPD according to severity of symptoms including exacerbations is relevant because much of the treatment offered patients is aimed at relieving symptoms and improving quality of life rather than reducing mortality.

As clinicians we are well aware that some patients with only mild airflow obstruction measured spirometrically may have quite significant symptoms and others with more severe airflow obstruction may deny significant symptoms. For this reason, the most recent version of GOLD advises categorisation of patients into mortality risk bands based on

1. Guide to the severity of COPD, according to the COPD-X guidelines[1,4]

Mild COPD
- FEV_1 about 60 to 80% predicted
- Symptoms: breathlessness on moderate exertion, recurrent chest infections, little or no effect on daily activities

Moderate COPD
- FEV_1 about 40 to 59% predicted
- Symptoms: increasing dyspnoea, breathlessness walking on level ground, increasing limitation of daily activities, cough and sputum production, exacerbations requiring corticosteroids and/or antibiotics

Severe COPD
- FEV_1 below 40% predicted
- Symptoms: dyspnoea on minimal exertion, daily activities severely curtailed, experiencing regular sputum production, chronic cough

For all COPD
- History of exacerbations: frequency may increase with severity
- Comorbidities: present across all severity groups. Common comorbid conditions include cardiovascular disease, skeletal muscle dysfunction, metabolic syndrome, osteoporosis, anxiety, depression, lung cancer, peripheral vascular disease and sleep apnoea

FEV_1, then into quadrants A to D according to a combination of level of symptoms/quality of life and future risk of exacerbations; the latter is based on the prior history of exacerbations. Other national guidelines use other variables to categorise or 'phenotype' patients. In all cases such categorisation is used to personalise therapy, although definitive studies are awaited to determine whether 'phenotyping' patients in this way impacts on their response to treatment. An important point to remember is that spirometry, although key in diagnosing COPD, is only one of several tests that may be performed to better understand the likely aetiology of a patient's symptoms, and further respiratory laboratory tests, for example measurement of diffusing capacity for carbon monoxide, may yield important further information (such as in a patient with emphysema).

Question 2

Can I be sure the patient's symptoms are due to COPD?

Answer

As patients with a past history of asthma may also develop persistent airflow obstruction over time, it is important to take a comprehensive clinical history and consider whether the diagnosis is COPD or asthma, or an overlap between the two. The co-existence of asthma in a patient with COPD increases the risk of exacerbations and is associated with a more rapid decline in lung function, so this is an important comorbidity to identify.

Early age of onset of symptoms and family history of asthma or atopy suggest a diagnosis of asthma, as does a large improvement in airflow obstruction with bronchodilator use (increase of 400 mL or more in FEV_1 with bronchodilator). A label of recurrent or wheezy bronchitis in childhood may in fact have been asthma.

As some patients with asthma may have also smoked, the distinction between asthma and COPD can be blurred in older people, and some patients have a combination of both.

Question 3

How should a patient with few symptoms and mild airflow obstruction be managed?

Answer

At a minimum, nonpharmacological management is highly recommended in the first instance for a patient who has few symptoms and mild airflow obstruction. Smoking cessation is key in managing COPD and is one of few interventions known to reduce mortality in this disease. Unlike, for example, cardiac disease, where beta blockers and ACE inhibitors are known to improve ejection fraction and mortality, the only interventions that clearly impact mortality in COPD are smoking cessation, long-term oxygen therapy in those patients with severe disease who are persistently hypoxaemic, and lung volume reduction surgery in selected patients with localised emphysema. Nonetheless, there is much that can be done for patients with COPD to improve symptoms and quality of life.

Pharmacological assistance with smoking cessation, including nicotine replacement therapy (NRT) and use of varenicline or bupropion, may be appropriate depending upon the patient's level of addiction and expressed needs. NRT is available in multiple formulations as first-line therapy, allowing tailoring to individual requirements. Evidence suggests that combinations of NRT (e.g. patch plus short-acting gum or lozenge) may be more effective than a single formulation and are equally efficacious as varenicline. Smoking cessation advice for patients is available through the Quitline, and the RACGP smoking cessation guideline (*Supporting Smoking Cessation: A Guide for Health Professionals*) is an excellent clinician resource (Box 2).

There is strong evidence to support vaccination against influenza in order to prevent exacerbations, and pneumococcal vaccination is also recommended in all patients with COPD.

Patients with even mild COPD are often quite inactive, as they tend to avoid activities that make them breathless and consequently lose physical conditioning and strength. Encouraging physical activity, perhaps even with a written 'exercise prescription', may improve exercise capacity, quality of life, mood and breathlessness. If the patient is significantly overweight, dietary advice may also be appropriate.

Question 4

What if the airflow obstruction is mild but the symptoms are more severe?

Answer

If the airflow obstruction is mild and the symptoms significant, consider whether comorbidities such as, for example, underlying cardiac disease, lack of fitness or obesity may be the cause for the patient's symptoms rather than the mild airflow obstruction (albeit

acknowledging the modest correlation between symptoms and objective findings of airflow obstruction in COPD).

Question 5

What is simple first-line pharmacotherapy for a patient with recently diagnosed mild COPD?

Answer

Historically, treatment of COPD has been started with single agents and escalated as necessary if there is lack of control or worsening of symptoms, including the presence of exacerbations. Certain treatments (e.g. combination therapy with a long-acting beta agonist [LABA] and a long-acting muscarinic antagonist [LAMA]) have only been trialled in patients with prespecified levels of airflow obstruction or frequency of exacerbations per year and entry criteria to such trials often provide the explanation behind regulatory recommendations regarding which patients should receive which therapy. The COPD-X stepwise guide to COPD management (*Stepwise Management of Stable COPD*) recommends initiating short-acting bronchodilators (short-acting beta agonists ([SABAs] or short-acting muscarinic antagonists [SAMAs]) on an as-needed basis in the initial management of mild COPD (Box 2).

Patients with mild COPD may have symptoms varying from mild to very troublesome. As mentioned above, patients may avoid activity and lose physical capacity, and bronchodilators of all types have been shown to improve capacity for exercise before developing breathlessness.

In a treatment-naïve patient with minimal symptoms, the above-mentioned nonpharmacological interventions combined with education about their condition and use of a short-acting bronchodilator may prove adequate initially in managing mild COPD. However, if symptoms persist and/or worsen, stepping up to a long-acting bronchodilator will be appropriate.

In patients with exacerbations, particularly if requiring oral corticosteroids and/or antibiotics, long-acting agents (both LAMAs and LABAs) have demonstrable benefits in terms of reducing exacerbations. There is now a plethora of LAMAs and LABAs available as monotherapies and in combination. The introduction of multiple agents over a short period of time has proved confusing for prescribers and patients alike, although providing a wider range of choice. Current PBS criteria require commencement of these drugs as monotherapy, with progression towards dual therapy in one inhaler, via streamlined authority, if the response is inadequate. Both LAMAs and LABAs are known to improve breathlessness and exercise capacity as well as quality of life, and also to reduce exacerbations, with small and rather inconsistent advantages having been demonstrated for LAMAs over LABAs. Inhaled corticosteroids in combination with LABAs are not recommended for mild disease in general but may be appropriate if the patient has a history of asthma. In reality, trials of medications in COPD have in general excluded patients with any features of asthma and so this recommendation is based on expert opinion.

2. COPD resources*

Guidelines

- *The COPD-X Plan: Australian and New Zealand Guidelines for the Management of Chronic Obstructive Pulmonary Disease 2016.* Version 2.46, June 2016. Lung Foundation Australia
  - copdx.org.au/copd-x-plan
- *COPD-X Concise Guide for Primary Care.* Version 3.02. Lung Foundation Australia
  - copdx.org.au/wp-content/uploads/2015/08/LFA-COPD-X-doc_V3.02_0815_WEB.pdf
- *Stepwise Management of Stable COPD.* Lung Foundation Australia
  - www.copdx.org.au
- *Pocket Guide to COPD Diagnosis, Management, and Prevention. A Guide for Health Care Professionals.* Updated 2015. Global Initiative for Chronic Obstructive Lung Disease (GOLD)
  - www.goldcopd.it/materiale/2015/GOLD_Pocket_2015.pdf

Severity assessment tools

- COPD Assessment Test (CAT)
  - www.catestonline.org/images/pdfs/CATest.pdf
  - www.catestonline.org/images/UserGuides/CATHCPUserguideEn.pdf
- Modified Medical Research Council (mMRC) Dyspnoea Scale
  - copdx.org.au/copd-x-plan/confirm-diagnosis/c2-diagnosis

Smoking cessation

- Quitline
  - www.quitnow.gov.au
- RACGP smoking cessation guidelines: *Supporting Smoking Cessation: A Guide for Health Professionals*
  - www.racgp.org.au/download/Documents/Guidelines/smoking-cessation.pdf

Other Lung Foundation Australia resources

- *COPD Action Plan* (and step-by-step instructions)
- COPD exacerbation algorithim
- GP Management Plan/Team Care Arrangement template
- Inhaler device fact sheets
- Videos
- Case-finding resources
  - lungfoundation.com.au/health-professionals

* Limited to the resources mentioned in the article.

Question 6

Can we prevent patients with mild COPD from developing worse airflow obstruction?

Answer

It is unclear whether it is possible to prevent the worsening of airflow obstruction in patients with mild COPD other than through smoking cessation. At this stage there is no real evidence that any pharmacological agents can slow decline of lung function, although it is known that exacerbations can be reduced by medications. In the Evaluation of COPD Longitudinally to Identify Predictive Surrogate End-points (ECLIPSE) study, which followed patients with COPD and a range of lung functions over time, it was evident that lung function in COPD may decline, stabilise or even occasionally improve over time.[6] As exacerbations are associated with a more rapid decline in lung function, in theory treatment to reduce these may enable stabilisation of lung function over time, although this has not been proven prospectively.

Question 7

Can we start a LAMA or LABA in a patient with a significant smoking history and progressive shortness of breath without prior spirometry testing?

Answer

Ideally a LAMA or LABA should not be started in a patient with significant smoking history and progressive shortness of breath without prior spirometry testing. Although a trial of treatment does not necessitate repeat spirometry to assess response – rather a clinical assessment of the impact of treatment is appropriate – spirometry provides the diagnosis (by demonstrating poorly reversible airflow obstruction) and is an important baseline measurement that provides useful information regarding short- and long-term prognosis.

Question 8

Can we start a LABA or LAMA in an asymptomatic patient with mild COPD on spirometry?

Answer

It is unclear why a patient without symptoms of COPD would have undergone spirometry, but perhaps it may have been performed for occupational purposes or in the setting of an acute respiratory illness that has now resolved. In the latter case, if the patient's acute symptoms have fully resolved, there is no indication for treatment.

It is important, however, to question the patient carefully about symptoms as many patients under-report symptoms of breathlessness on exertion and may restrict their daily activity in order to avoid inducing breathlessness. Two useful brief questionnaires that may be helpful to exclude initially undeclared symptoms are the COPD Assessment Test (CAT) and the modified Medical Research Council (mMRC) Dyspnoea Scale (Box 2).[7,8]

If the patient is truly asymptomatic then there is no indication for treatment to try to prevent deterioration (apart from modifying counter-productive behaviours through, e.g. maintaining an active lifestyle and smoking cessation). Two large-scale studies demonstrated no significant impact on decline in lung function from regular treatment with either a LABA/inhaled corticosteroid combination over three years or a LAMA over four years.[9,10]

Question 9

Should patients with mild COPD be referred for pulmonary rehabilitation?

Answer

Referral to pulmonary rehabilitation should be considered for all patients with COPD, even those with mild disease. Pulmonary rehabilitation is known to improve not only exercise capacity but also quality of life, and these effects are often much greater than with pharmacotherapies.

If patients are reluctant, they can be encouraged to take up their own exercise program, possibly walking with a friend, taking the dog for regular walks, using some weights at home or joining a gym.

Referring a patient with mild COPD to a specialist is indicated if the patient's symptoms seem out of proportion to the severity of their COPD or the patient wishes to understand more about their disease and how to manage it. The correlation between FEV_1 and symptoms is not strong, but if symptoms appear to be of proportion to the severity of the airflow obstruction then specialist referral for more comprehensive lung function testing to determine degree of gas trapping and presence of any reduction in carbon monoxide transfer factor (often significantly reduced in emphysema, sometimes with maintained spirometry) may prove helpful. Other considerations include breathlessness due to lack of fitness, comorbidity such as unrecognised cardiac disease, or alternative diagnoses (e.g. breathlessness secondary to low haemoglobin from any cause, obesity and others).

Conclusion

Patients with mild COPD may not have many symptoms but are at risk of future worsening of their disease as well as complications. Detecting and managing mild COPD is worthwhile because these patients can benefit from evidence-based interventions such as smoking cessation, appropriate vaccination, pharmacotherapies and other interventions to increase activity levels, which can delay progression of the disease, improve quality of life and reduce mortality. All too often as clinicians we are confronted with patients with various severe diseases in whom we wish we could have 'turned back the clock' and intervened earlier. In regard to COPD, GPs and their practice teams could consider seizing the opportunity to proactively manage patients via their chronic disease registers and programs and also consider implementing strategies such as case finding in at-risk patients (smokers, ex-smokers and those with respiratory symptoms) to detect early and mild disease and then engage with these patients and implement evidence-based interventions to improve their outcomes.

Lung Foundation Australia has some excellent resources on their website (lungfoundation.com.au/health-professionals/general-practice) that clinicians may find useful in managing their patients with COPD, including *COPD-X Concise Guide for Primary Care, Stepwise Management of Stable COPD, COPD Action Plan* (and step-by-step instructions), a COPD exacerbation algorithm, a GP Management Plan/Team Care Arrangement template, inhaler device use fact sheets, as well as videos and case-finding resources. RMT

References

A list of references is included in the website version of this article (www.medicinetoday.com.au).

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Professor Frith has received honoraria and third-party travel for educational, advisory board work in the past five years from AstraZeneca, GlaxoSmithKline, CSL, Novartis, Boehringer Ingelheim, Menarini and Mundipharma; and is a member of the Boards of Directors for Lung Foundation Australia and Global Initiative for COPD (GOLD) and of the COPD Co-ordinating Committee and Executive for Lung Foundation Australia, for which third-party travel arrangements have been accepted.

Professor McDonald has received honoraria for advisory board participation and education presentations from AstraZeneca, GlaxoSmithKline, Novartis and Pfizer, and nonfinancial support from Air Liquide, outside the submitted work; and is Chair of the COPD National Program, Lung Foundation Australia.

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