

COPD

Case Study Feedback

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Individualised Feedback

bpac^{nz} now provides individualised feedback and CME credits for all GPs who complete the bpac^{nz} case studies.

Although you did not submit a case study this time we hope that the panel discussion and specialist comments will still be useful to you.

If you wish complete this case study and earn CME credits, an interactive version of this case study is available at www.bpac.org.nz

Notes

Panel comments summarised and edited by

Dr Trevor Walker, General Practitioner and Program Developer bpac^{nz}.

Acknowledgement

bpac^{nz} would like to thank the panel and Professor Ian Town for their support and contribution to this case study.

Feedback

Please let us know if there is any way we can make our case studies more useful to you. At bpac^{nz} we want our resources to be helpful to you in your day to day clinical practice. We would be pleased to receive any suggestions that you have.

Email: trevor@bpac.org.nz

Phone: 03 477 5418

Fax: 0800 10 76 73

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Case Study: COPD

Mr Parkhouse

Mr Parkhouse is 66 years-old. He gave up his accountancy practice 16 years ago and bought a hobby farm. Unfortunately he found that he did not have the physical capability to run the farm as he was getting short of breath with exertion. He gave up the farm after five years and moved into town. At around this time he was diagnosed as having COPD almost certainly related to his years of smoking. He is coming today for review of his COPD.

Apart from his COPD Mr Parkhouse has enjoyed good health. He stopped smoking 10 years ago. He has a normal blood pressure. Examination does not suggest that Mr Parkhouse has any problem other than his COPD.

Previous investigations have included a normal blood count, glucose, lipids, ECG and CXR.

His current medication is inhaled ipratropium 40mcg and salbutamol 200mcg regularly four times a day via a spacer supplemented by inhaled salbutamol on an as required basis. In addition he has had three courses of antibiotics and prednisone this year for exacerbations with signs of bacterial infection.

His spirometry results are:

Baseline	FEV ₁ = 0.89 (28% predicted) FVC = 2.74 (67% predicted) FEV ₁ /FVC = 32%
Post-bronchodilator	FEV ₁ = 1.04 (improvement of 150ml i.e. 17%)

Questions

1. Based on these results estimate the severity of Mr Parkhouse's COPD.
2. What intervention(s) could you introduce to optimise Mr Parkhouse's functional capacity?
3. What intervention(s) could you introduce to decrease Mr Parkhouse's problems with exacerbations?
4. What preventive measures could you take to protect Mr Parkhouse's lung function?

Dear Dr

The most important messages we wanted to get across about the treatment for people with severe COPD are:

- Arrange pulmonary rehabilitation and prescribe tiotropium, which is now available in New Zealand on a Special Authority application.
- Give a home supply of prednisone and antibiotics to initiate early treatment of exacerbations.
- Offer annual influenza immunisation and encourage avoidance of smoke (active or passive) and other inhaled irritants to help preserve lung function.

As you can see from the panel discussion and specialist consultation there is a wide range of other useful interventions.

Pulmonary rehabilitation is one of the most effective interventions for COPD. It reduces symptoms and improves function. It should be offered to all patients with moderate or severe COPD.

Tiotropium is now available on a Special Authority application from a general practitioner for patients with COPD who have:

- breathlessness \geq grade 4 on the MRC dyspnoea scale, and
- $FEV_1 < 40\%$ of predicted, and
- trialed a dose of at least 40 mcg ipratropium q.i.d for one month.

The earlier an exacerbation is treated the better the results and therefore most patients who get exacerbations will benefit from having a supply of prednisone (40mg for 7-10 days) and a suitable antibiotic, (amoxicillin or doxycycline) at home with instructions on how and when to take them.

People with COPD who have stopped smoking will benefit from also avoiding passive smoke from family members and friends and from avoiding other smoke, fumes and inhaled irritants.

There is good evidence to support the use of annual influenza immunisation in the protection of the lung function of people with COPD.

We understand that how you fill out a case study is not an accurate indication of how you would respond in an actual consultation. However we hope that the case study has given you an opportunity to reflect on your clinical practice and maybe identify some things you could change.

Dr Trevor Walker

Email: trevor@bpac.org.nz

Fax: 0800 10 76 73

Analysis of responses with GP panel comments

1. Estimate the severity of Mr Parkhouse's COPD.

	bpac ^{nz} panel	You	Colleagues
Severe	+		89%

Almost everyone agreed that Mr Parkhouse has severe COPD. The Australia and New Zealand guidelines use less than 40% to indicate severe COPD and Mr Parkhouse is well below this at 28%. At this level he almost certainly has a high level of functional impairment with severe curtailment of activities of daily living and dyspnoea on minimal exertion.

2. What intervention(s) could you introduce to optimise Mr Parkhouse's functional capacity?

	bpac ^{nz} panel	You	Colleagues
Pulmonary rehabilitation	+		61%
Tiotropium inhaler	+		79%
Theophylline	+/-		35%

- Pulmonary rehabilitation is one of the most effective interventions for COPD. It reduces symptoms and improves function. It should be offered to all patients with moderate or severe COPD.

However some respondents pointed out that this is not always available locally and travel is often a problem for people with moderate or severe COPD. An alternative is to develop outcome goals with the patient in areas such as physical disability, social impairment and domestic activity and to implement a personal plan of education, physical exercise, and psychological and social interventions to help meet these goals.

- Tiotropium is at least as effective and may be superior to long acting beta-2 agonists (LABAs) in improving clinical outcomes in COPD; it has been fully subsidised for severe COPD on set criteria since February this year. Some respondents reported that tiotropium was beneficial for some of their patients who did not meet the special authority criteria but were willing to pay for the medication.
- Theophylline may be beneficial but its narrow therapeutic index increases the risks of adverse effects.

3. What intervention(s) could you introduce to decrease Mr Parkhouse's problems with exacerbations?

	bpac ^{nz} panel	You	Colleagues
Home supply of prednisone	+		51%
Home supply of antibiotic	+		52%
Increased dose and frequency of short acting bronchodilators	+		12%
To reduce frequency of exacerbations trial of inhaled corticosteroids	+		78%

- The earlier an exacerbation is treated the better the results and therefore most patients who get exacerbations will benefit from having a supply of prednisone (40mg for 7-10 days) and a suitable antibiotic, (usually amoxicillin or doxycycline) at home with instructions on how and when to take them. Although most respondents mentioned the importance of early treatment of exacerbations only 51% specifically mentioned giving the patient a supply to have on hand at home.
- During an exacerbation patients should increase the dose and frequency of short acting bronchodilators.
- A trial of inhaled corticosteroids is justified for people with severe COPD with frequent exacerbations.

4. What preventive measures could you take to protect Mr Parkhouse's lung function?

	bpac ^{nz} panel	You	Colleagues
Smoke avoidance	+		45%
Influenza immunisation	+		86%
Pneumococcal immunisation	+/-		73%

- People with COPD who have stopped smoking will benefit from also avoiding passive smoke from family members or friends and avoiding other smoke, fumes or inhaled irritants.
- There is good evidence to support the use of annual influenza immunisation in the protection of the lung function of people with COPD.
- The evidence for pneumococcal immunisation is less convincing but it will help protect people who already have impaired lung function from suffering the effects of pneumonia.

Other interventions that were mentioned

	bpac ^{nz} panel	You	Colleagues
Chest physiotherapy or breathing exercises			9%
Combined LABA / Steroid inhaler			5%
Attention to co-morbidities	+		5%
Oral steroids (not in an exacerbation)			4%
Self-management plan	+		38%
Long-acting beta-2 agonist			29%
Inhaler technique and the use of a spacer	+		15%
Domiciliary oxygen			13%
Psychosocial support or patient support group	+		12%

There was a wide range of other suggestions to contribute to Mr Parkhouse's treatment. Although they were not the main thrust of our questions some of these suggestions are very important. Particularly important were a:

- self management plan,
- inhaler technique - in particular the use of a spacer,
- psychosocial support,
- referral to a patient support group and
- paying attention to actual or potential co-morbidities.

Oral steroids (4%) have no role outside of an exacerbation and are not recommended for long-term use in COPD. However it may be difficult to withdraw them after an exacerbation. A trial of oral steroids outside of an exacerbation is not warranted and does not predict the value of inhaled corticosteroids.

Bonus Questions

This pathology specimen shows a complication of COPD. The risk of this complication can be increased by inappropriate treatment.

1. What is the complication shown in the specimen?
2. What treatments for COPD can increase the risk of getting the complication?



Answers to the Bonus Questions

Almost everyone correctly identified that this is a spine demonstrating compression fractures of vertebrae secondary to osteoporosis.

People with high risk of COPD are at high risk of osteoporosis because of smoking, vitamin D deficiency, low BMI, sedentary lifestyle and hypogonadism. Another good reason for smokers to quit.

Again most people identified steroids as increasing this risk. This is certainly the case for oral steroids and although the evidence implicating inhaled steroids is not strong it does seem likely that high doses for prolonged periods contribute to the problem.

The prize BNFs have gone out to the winners. The BNF is a great resource for prescribers.

Review by Respiratory Physician - Professor Ian Town

Dear Colleague,

Re: Mr Parkhouse (66 years)

Problem List:

1. COPD - severe (FEV₁ 28% predicted)
2. Partial response to inhaled bronchodilator (17%)
3. Previous smoker - smoke free for 10 years
4. Frequent exacerbations

History:

Thank you for your referral about this man who has become progressively limited with his COPD. I note that he stopped work over 16 years ago and then struggled with his hobby farm due to progressive shortness of breath. He is now quite disabled, as one would expect with an FEV₁ of 0.89L, less than 30% of predicted values.

On further questioning I determined that he has few other active health problems. At this stage he does not suffer from any cardiac symptoms or other disorders related to tobacco use, amounting to 50 pack years in total.

I note that you have screened him for hypertension, diabetes and anaemia and these results are all negative.

There is no family history of lung disease and he has no domestic exposures to pets or other factors that might affect his breathing. There is no history of atopy or previous asthma.

Examination:

On examination he was breathless after undressing and very breathless after a short walk in the outpatients department. He would not tackle a flight of stairs. His upper respiratory tract was normal, there was no lymphadenopathy. Pulse was regular at 100 per min, BP 148/96, JVP not elevated. There were no signs of left or right heart failure. The chest was over-inflated and hyper-resonant to percussion. Expansion was reduced and breath sounds were quiet throughout the chest. Some wheeze was audible on forced expiration.

Investigations:

Spirometry was as follows:

FEV₁ = 0.89L (29% predicted)

FVC = 2.74L

FEV₁/FVC = 32%

FEV₁ after BD = 1.04L improvement of 150ml = 17%

A chest x-ray performed recently was normal with no evidence of mass lesion, pleural fluid or cardiac enlargement. An ECG showed borderline P pulmonale suggesting right atrial enlargement.

Assessment

This man has severe COPD and with frequent exacerbations is experiencing a relatively rapid decline in lung function. His quality of life is deteriorating and he is increasingly suffering from social isolation.

My recommendations are as follows:

1. Screen for depression and alcohol abuse.
2. Referral for pulmonary rehabilitation if this is available at the local hospital. Failing that, a comprehensive education programme could be organised using resources from the ARFNZ and an exercise programme developed for him. A physiotherapist should go through dyspnoea control and pursed lip breathing techniques.
3. He meets the current Pharmac criteria for the use of tiotropium which has been shown to improve lung function, QOL and reduce exacerbation rates in the medium term.
4. Self management strategies may be useful if he has the confidence to self start treatment with an antibiotic and prednisone in the early stages of an exacerbation. Any advice should be written down and the education should involve his spouse.
5. He may benefit from the use of inhaled corticosteroids such as beclomethasone 1mg daily or fluticasone in half this dose - data suggests that these agents can reduce the frequency of exacerbations. He should have the influenza vaccination annually.
6. A case can be made to provide pneumococcal vaccination every 5 years even though robust data in COPD patients is not yet available.
7. LABA drugs have been proven to help in such patients but they are not approved for COPD in NZ. Tiotropium has similar benefits.
8. As with all such patients MDI use should be checked and most will benefit from a spacer device.
9. He should be reviewed at least annually with spirometry. If he is getting worse or showing signs of ankle oedema a further specialist opinion may help. At that stage screening for hypoxaemia ($PaO_2 < 50$ mmHg) when domiciliary oxygen may be considered.

Yours sincerely

Ian Town
Respiratory Physician