Pharmaceutical care of people with chronic obstructive pulmonary disease

Course activities
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Case Study 1

Mr Jones, a 64-year-old patient of the local surgery who is well known to you has recently been to hospital for spirometry following testing at the local surgery which showed an FEV1* of 60% one week after a respiratory tract infection. Over the last two years he has received six courses of antibiotics for “chest infections” and frequently complains to you of breathlessness.

His spirometry results show that he has an FEV1 of 65% of that predicted for his age. As the practice pharmacist you have a discussion about the treatment that should be commenced for this patient.

Doctor: Mr Jones’s spirometry results have been reported by the hospital. His FEV1 is 65% on hospital reporting. How does that compare with the results from the review at the surgery?

Pharmacist: Last month when he was referred to the hospital his FEV1 was 60% using the surgery instrument. Has he stopped smoking or is he still smoking about 15 cigarettes daily?

Doctor: I believe that he has stopped smoking but it is difficult as he has smoked since he was 15 but he was given counselling and a prescription for patches at his last appointment. That wouldn’t account for the improvement in FEV1 however.

Pharmacist: No, but stopping smoking will help prevent disease progression. Are there any other factors implicated in the development of COPD, has he worked in the mines or shipbuilding? Has he had recurrent respiratory tract infections in the last couple of years?

Doctor: According to his records he has received three courses of amoxicillin last winter for respiratory tract infections and his occupation history is brief as he appears to have had a few different jobs and many periods of unemployment. He doesn’t appear to have any other morbidity and is on no other prescribed medication. What do you suggest that we start as inhaled therapy?

* FEV1: Forced Expiratory Volume in first second (FEV1) is the volume of air expelled in the first second of a forced expiration starting from full inspiration. FEV1%: This is the FEV1 expressed as a percentage of the total volume. It is sometimes called the FEV1 Ratio or the FEV1/ VC% when it is shown as a percentage of the VC volume, or the FEV1/ FVC% when shown as a percentage of the FVC. This parameter has nothing to do with predicted values. (In normal lung function this should generally be over 75%; i.e. the subject should get at least three quarters of their total air out in the first second). ©Priory Lodge Education Limited, 1997
Discussion points – Case Study 1

Do you have enough information to make an informed decision about prescribing? If not what additional information would you like?

Based on this discussion what would you suggest is commenced for this patient?

What measures would you use to monitor the effectiveness of the prescribed therapy and what would be the next step if this therapy is not effective?
Case Study 2

Mrs Walker, a 56-year-old patient with known COPD has been prescribed a course of oral amoxicillin 500mg three times a day for an exacerbation of her COPD. She is currently maintained on tiotropium 18micrograms at night, Seretide Accuhaler® 1 dose twice a day and a salbutamol inhaler 2 puffs as required. This is the second exacerbation that Mrs Walker has experienced this winter and on the last occasion she was admitted to hospital for 6 days and discharged with support. She does not have home oxygen. Mrs Walker’s husband has come into the pharmacy to collect her prescription for antibiotics.

Mr Walker: What medicines is she being given this time? I don’t know that the last lot worked as this is the second infection that she has had this winter and it’s only the start of December.

Pharmacist: Mrs Walker has been given the same antibiotic as the last time as it is likely that the same organism caused the infection. The doctor has given her a good dose that she needs to take three times a day for 7 days.

Mr Walker: That’s what she had the last time but it’s only 6 weeks since she last had antibiotics and the last time she was in hospital for 7 days. This time the GP seems to think that it is better that she stays at home rather than go into hospital. He has contacted the hospital and they are sending some nurses out to have a look at her at home.

Pharmacist: That will be the specialist respiratory nurses who work with both the hospital doctors and the GP to try to keep people at home rather than sending them into hospital. Did Mrs Walker not get some visits from them the last time she was in hospital and get the nebuliser for a few days as well?

Mr Walker: Yes, they did come to visit her a couple of times and then they took the nebuliser away. She also had those cylinders. Will she get them again?

Pharmacist: She may get these things again but that will depend on what the nurses think when they come to see her and what happens in the discussion at the hospital and with the GP. If she does need the cylinders I can deliver them later today.
Discussion points – Case Study 2

What are the NICE/BTS criteria for patients being admitted to hospital?

What additional information might you like to know about Mrs Walker and the decision to prescribe amoxicillin for a second exacerbation of COPD?

Are there any additional therapies that should be considered for this patient?
Are nebulisers an effective way of managing an exacerbation of COPD or should the patient be continued on inhaled therapy?

If nebulised therapy is to be commenced on this patient is there any therapy that should be discontinued while she is receiving nebulised therapy?
Case Study 3

Mr Jamieson is a 70-year-old patient who has been admitted to hospital with an exacerbation of COPD. He has been prescribed oral steroids, nebulisers and controlled oxygen therapy at 24% via a Venturi mask during his admission. During this admission he is shown to have type two respiratory failure. The possibility of home oxygen therapy is discussed with the patient.

During a conversation with Mr Jamieson you discover that his wife smokes 5 cigarettes daily but he stopped smoking 5 years ago.

On discharge Mr Jamieson is recommenced on his tiotropium and Seretide inhalers and salbutamol via a nebuliser. His prednisolone is to be stopped after a further 3 days completing a 10-day course. Mr Jamieson is given an appointment to attend the respiratory outpatient clinic in 4 weeks time when his arterial blood gases will be measured. His GP has been asked to prescribe an oxygen cylinder for ‘as required’ use.
Discussion points – Case Study 3

Oxygen therapy has been shown to be effective in severe COPD when used for more than 15 hours a day. What additional information should be obtained from this patient and his family before long-term oxygen therapy (LTOT) is prescribed?

What are the health and safety implications for patient prescribed LTOT?

What are the different ways of supplying LTOT and how is this prescribed and supplied in Scotland – can a GP order a concentrator?
Case Study 4

Mrs Brown and her daughter consult you in your pharmacy about smoking cessation. Mrs Brown has moderate COPD and smokes 10 cigarettes daily. Her daughter, who is 30, smokes 20 cigarettes daily.

Mrs Brown: I think that it’s time that she gave up smoking.

Miss Brown: I’ll only do it if you agree to give them up too. It’s not doing your chest any good; you know that you’ve been in hospital for three times in the last year and the doctors have told you that the fags aren’t doing you any good. Don’t use me as your excuse.

Mrs Brown: I know that I have to do it but you giving up too will help me too.

Pharmacist: Ladies, there are lots of advantages in giving up smoking but you need to want to give up yourself and not be persuaded by each other into giving up.

Both: We know that and we do want to give up but think that the support from each other will help.

Pharmacist: I need to get some more information from you so that I can see if there is any help that I can give you. First please can you tell me a bit about your smoking history: how many do you smoke each day and for how long have you smoked?

Mrs Brown: I now smoke about 10 cigarettes a day and have done that for the last year but before that I smoked about a pack and a half a day since I was about 20.

Miss Brown: I smoke about 20 a day and that’s built up gradually over the last 15 years. I stopped when I was pregnant but went straight back on them after that.

Pharmacist: And do you crave a cigarette when you wake up in the morning, or are there other times of the day that are bad for you?

Mrs Brown: I reach for the cigarettes as soon as I wake up

Miss Brown: I don’t need them first thing in the morning but enjoy one after a coffee or when I’m out for a drink.
Discussion points – Case Study 4

Is there any other information that you would find helpful in deciding which products to suggest for these patients?

Which products would be suitable for each of these patients? Does the same NRT product suit both?

Are there any other services in your area that you might like to refer the patients to for support or follow up?

Does smoking cessation have any impact on other therapies that these patients may be taking for COPD?
Multiple choice questionnaire.

This multiple choice questionnaire (MCQ) allows you to test your understanding. Please tick either TRUE or FALSE for each part (a to d) for each of the twenty questions on the next six pages (page 12 - 16). Tear off the answer sheet on page 17 and copy your ‘ticks’ onto this sheet, which you can then return to NES Pharmacy at the address below

NHS Education for Scotland (Pharmacy)
3rd Floor, 2 Central Quay
89 Hydepark Street
Glasgow G3 8BW

Completion of this MCQ is optional to participants and you will not receive an individual score. However, successful completion of the MCQ will accrue an additional 2.5 NES CE hours. Model answers will be sent, at the end of the current education and training year, to participants who have submitted this MCQ.
1. COPD is a disease
   a. characterised by reversible airways obstruction
   □ True □ False
   b. which rarely occurs in patients under the age of 35
   □ True □ False
   c. in which symptoms rarely vary between days
   □ True □ False
   d. which is linked to a chronic productive cough
   □ True □ False

2. Severe COPD is defined as
   a. an FEV1 of less than 50% of predicted by NICE / BTS
   □ True □ False
   b. an FEV1 of less than 50% of predicted by ATS / ERS
   □ True □ False
   c. an FEV1 of less than 50% of predicted by GOLD
   □ True □ False
   d. an FEV1 of less than 30% of predicted by NICE / BTS
   □ True □ False

3. When the diagnosis of COPD is considered the patient should also be questioned about
   a. occupational history
   □ True □ False
   b. dyspnoea according to the MRC dyspnoea scale
   □ True □ False
   c. pets
   □ True □ False
   d. ankle swelling
   □ True □ False

4. Possible differential diagnosis considered when diagnosing COPD are
   a. lung cancer
   □ True □ False
   b. pneumothorax
   □ True □ False
   c. heart failure
   □ True □ False
   d. cystic fibrosis
   □ True □ False

5. Patients with severe COPD
   a. may have type II respiratory failure
   □ True □ False
   b. should be managed with a combination of inhaled corticosteroid and long acting beta agonist
   □ True □ False
   c. will rarely be managed in hospital
   □ True □ False
   d. are maintained on long term oxygen therapy for more than 20 hours a day
   □ True □ False
6. A patient who has smoked
   a 15 cigarettes a day for 42 years has a smoking history of greater than 30 pack years
   b 10 cigarettes a day for 30 years has a smoking history of 10 pack years
   c 20 cigarettes a day for 10 years has a smoking history of 10 pack years
   d 40 cigarettes a day for 30 years has a smoking history of greater than 30 pack years

7. Smoking cessation
   a in patients with COPD will return the patients FEV1 to normal for their age
   b in patients with COPD will return the rate of decline in FEV1 to normal
   c in patients with COPD will have no effect on lung function
   d is the most beneficial intervention for all patients with COPD

8. The National institute for Health and Clinical Excellence (NICE) / British Thoracic Society (BTS) guideline for the management of COPD indicate that all patients
   a with an exacerbation of COPD should be prescribed high dose inhaled corticosteroids
   b admitted to hospital with an exacerbation of COPD should be prescribed oral corticosteroids
   c should have therapy discontinued if it is shown to ineffective after two weeks
   d should be referred pulmonary rehabilitation if they think that they are functionally disabled by the disease

9. The NICE / BTS guidelines for the management of COPD recommend
   a the use of as required short acting inhaled beta agonists
   b the use of anticholinergics
   c the use of ipratropium and tiotropium together
   d the use of combination inhalers in moderate to severe disease
10. Patients with COPD should only be prescribed
   a. inhaled corticosteroids if they have demonstrable reversibility □ True □ False
   b. corticosteroids in an exacerbation if they have had a steroid trial □ True □ False
   c. ipratropium if a short acting beta agonist has shown no benefit □ True □ False
   d. a long acting beta agonist if they are also receiving an inhaled corticosteroid □ True □ False

11. Patients with COPD demonstrate no increase in quality of life
   a. when prescribed inhaled corticosteroids unless they demonstrate reversibility □ True □ False
   b. when prescribed tiotropium rather than ipratropium □ True □ False
   c. unless their FEV1 is also increased □ True □ False
   d. when prescribed a combination of inhaled corticosteroids and long acting beta agonists □ True □ False

12. Patients with COPD who are prescribed long term oxygen therapy (LTOT) at home should
   a. be encouraged to stop smoking □ True □ False
   b. use cylinders as the preferred method of delivery □ True □ False
   c. should have a concentrator ordered by their GP □ True □ False
   d. should use a compressor and air to drive any nebulised medicines □ True □ False

13. Patients with COPD
   a. should have their nebulised drugs delivered by a nebuliser driven by oxygen □ True □ False
   b. should have their nebulised drugs delivered by a nebuliser driven by air □ True □ False
   c. which is severe should be prescribed a combination of an inhaled corticosteroid and long acting beta agonist □ True □ False
   d. which is moderate to severe should be prescribed tiotropium □ True □ False
14. Other therapies which have shown usefulness in the management of COPD include
   a) mucolytics □ True □ False
   b) diuretics □ True □ False
   c) theophylline □ True □ False
   d) prophylactic antibacterial therapy □ True □ False

15. One of the assessment criteria which favour home management of exacerbations of COPD is that the patient
   a) does not currently receive home oxygen therapy □ True □ False
   b) lives alone □ True □ False
   c) has an oxygen saturation above 80% □ True □ False
   d) mild breathlessness □ True □ False

16. Abrupt withdrawal of prednisolone following management of an exacerbation of COPD
   a) may precipitate a further exacerbation of COPD □ True □ False
   b) is acceptable if the patient has been on a high dose for less than 21 days □ True □ False
   c) can be undertaken if the patient is not on a maintenance dose of oral corticosteroids □ True □ False
   d) cannot be undertaken if the patient is on high dose inhaled corticosteroids □ True □ False

17. An infective exacerbation is characterised by
   a) an increased volume of sputum and a cough □ True □ False
   b) an increased volume of sputum and increased purulence of sputum □ True □ False
   c) an increased volume of sputum and increased breathlessness □ True □ False
   d) an increased volume of sputum and increased FEV₁ □ True □ False
18. The most common causative organisms of infective exacerbations of COPD are
a. Staphylococcus aureus
b. Streptococcus pneumonia
c. Haemophilus influenzae
d. Streptococcus faecalis

19. An appropriate antibacterial for the management of an exacerbation of COPD is
a. amoxicillin 500mg three times a day for a non-penicillin allergic patient
b. amoxicillin 3g twice a day for non-penicillin allergic patients
c. clarithromycin 500mg twice a day for a penicillin allergic patient
d. penicillin V 500mg four times a day for a non-penicillin allergic patient

20. The multidisciplinary team involved in the care of patients with COPD should include
a. Pharmacists
b. Dieticians
c. Physiotherapists
d. Occupational therapists
Chronic Obstructive Pulmonary Disease:
MCQ answer sheet

Name

Address

RPSGB Reg. No.

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T = True   F = False