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SPECIAL REPORT

Optimising the management of patients with COPD

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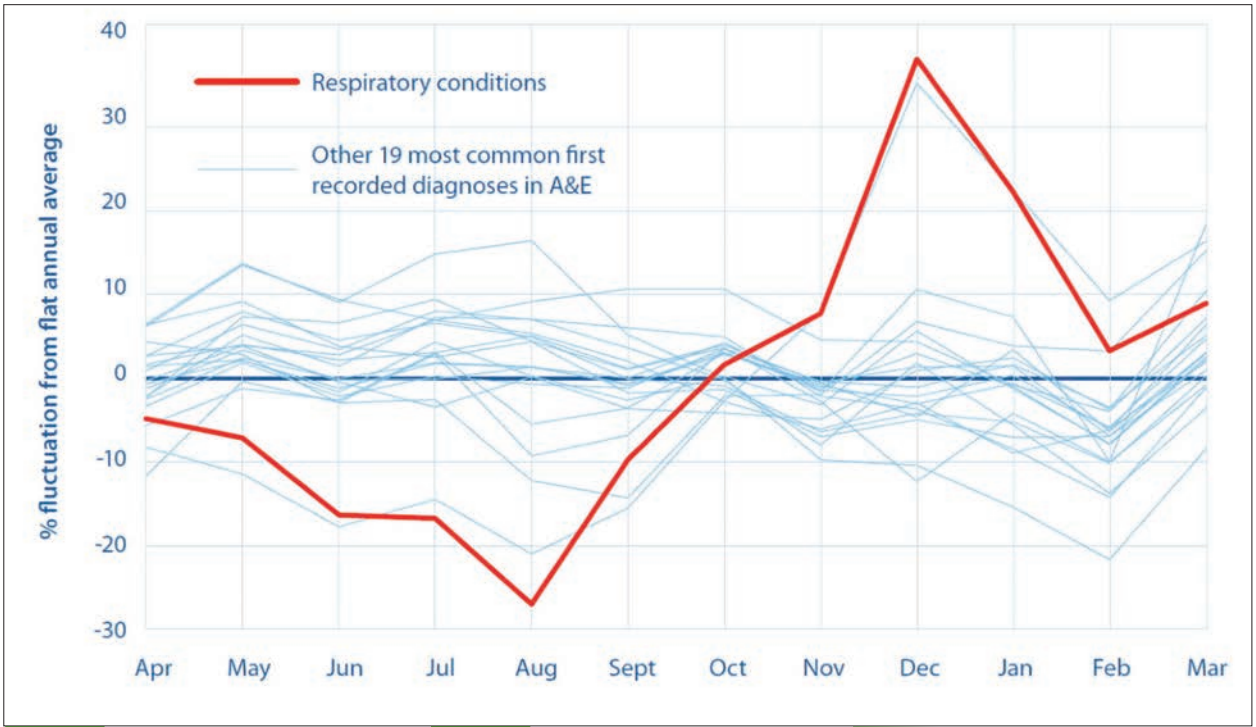


FIGURE 1
Average fluctuation in admissions during the years 2010 to 2017.[3] Data are derived from Hospital Episode Statistics and show average monthly unplanned admissions compared with the flat average for the year

How should diagnosis be confirmed?

THE MORBIDITY AND EXCESS MORTALITY ASSOCIATED WITH LUNG DISEASE HAS BEEN brought into focus by the recent launch of the NHS Long Term Plan by NHS England[1] with the prominent inclusion of respiratory medicine (see box 1, p22).

Many of the recommendations and proposals impact on future care for people with COPD, in particular the organisation of care outside hospital, and align with the recent Taskforce for Lung Health report.[2]

DIAGNOSIS

An estimated 1.2 million people are living with COPD making it the second most common lung condition after asthma.[3] Around 4.5% of people aged over 40 years have been diagnosed with COPD. It is predominantly a condition of older age and most commonly diagnosed in the seventh to eighth decades. The hallmark of COPD diagnosis is opportunistic case finding based on clinical suspicion rather than screening.

COPD should be suspected in an older adult (at least 35 years old but typically more than 45 years old) with symptoms such as breathlessness and wheeze, cough and phlegm, who has an associated risk factor; typically current, or a past history of, cigarette smoking. Other risk factors include passive environmental and occupational exposure to inhalants.

A diagnosis should also be suspected where a person with one or more risk factors develops a lower respiratory tract infection requiring treatment.

COPD is far more common in heroin and crack cocaine smokers and occurs at a younger age. A recent UK screening study shows a COPD prevalence of around 50% in current or former heroin and crack cocaine smokers attending drug centres.[4]

How should exacerbations be managed?

Which patients should be referred?

Diagnosis is made using spirometry in patients with relevant clinical features. Spirometry must be quality assured and performed by an individual who is trained, has ongoing support and supervision and who is doing the test regularly. A diagnosis of COPD should only be based on post-bronchodilator spirometry.

Taking into consideration the NICE asthma diagnostic guidance and current variability in spirometry services, many respiratory specialists believe that initial reversibility testing can be helpful, in particular to highlight asthma where there is reversibility of > 400 ml and where abnormal pre-bronchodilator spirometry normalises with a bronchodilator. Once a diagnosis is confirmed it is not recommended that reversibility is performed again unless there is a specific indication.

Interpretation of most spirometry is straightforward but sometimes it is »

more challenging and needs a clinician experienced in interpretation. Whatever local model is chosen to deliver spirometry that expertise needs to be available.

Some services are increasing specialist involvement in reporting of first (diagnostic) spirometry in order to get the diagnosis right first time. An increasing number of respiratory laboratories are using the lower limit of normal (LLN) to report airflow obstruction. This reduces overdiagnosis of COPD in older individuals and underdiagnosis in younger people (hence improving the chance for early intervention in the latter group) as shown in figure 2, below.

The 2019 international Global Obstructive Lung Disease (GOLD) COPD guideline[6] recommends using a FEV_1/FVC ratio of < 0.7 but specifically caution against diagnosing COPD in someone with a single post-bronchodilator FEV_1/FVC measurement of between 0.6 and 0.7, because of biological variation. Using LLN makes spirometry more complex to interpret than using the traditional fixed cut-off for FEV_1/FVC ratio of 0.7 and supports greater specialist input and oversight.

If an individual is diagnosed with COPD it is appropriate to perform a chest X-ray and a full blood count (for polycythaemia and eosinophil count) as recommended by NICE.[7] At this point it is important to record MRC dyspnoea score, body mass index (BMI) and a measure of quality of life, such as the CAT score shown in figure 3, p23.[8]

In December 2018, NICE updated its 2010 COPD guideline.[7] The vast majority of the recommendations were unchanged or little changed but there were some important updates about treatment. A full review of evidence-based treatment was published in the November 2017 edition of this journal[9] and a detailed review of pulmonary rehabilitation in the January 2018 issue.[10]

Box 1

The NHS Long Term Plan[1]

The Plan includes a pledge to redesign NHS services to reduce pressure on emergency hospital services and to boost out of hospital care. By 2021, there is an aspiration to integrate primary and specialist care systems and improve emergency care so that same day discharge increases from a fifth to a third of admissions. The Plan highlights large variations in zero days inpatient stay between hospitals which provides a clear target for some centres. Because of the high numbers, this will need to include a focus on emergency COPD admissions which is welcome as there is strong evidence that many COPD exacerbations can be managed at home.

Two specific aspects of emergency respiratory care are highlighted – the fact that over the past seven years hospital admissions for lung conditions have risen three times faster than for all cause admissions plus the seasonal nature of respiratory disease with major impact on winter pressure within the NHS,[6] see figure 1, p21.

Other areas highlighted that have particular relevance to COPD services include the recognition that a third of people admitted to hospital with a COPD exacerbation have not been diagnosed, the need for a radical overhaul of diagnostic services and the recognition that expansion of pulmonary rehabilitation could prevent 80,000 hospital admissions over the next ten years.

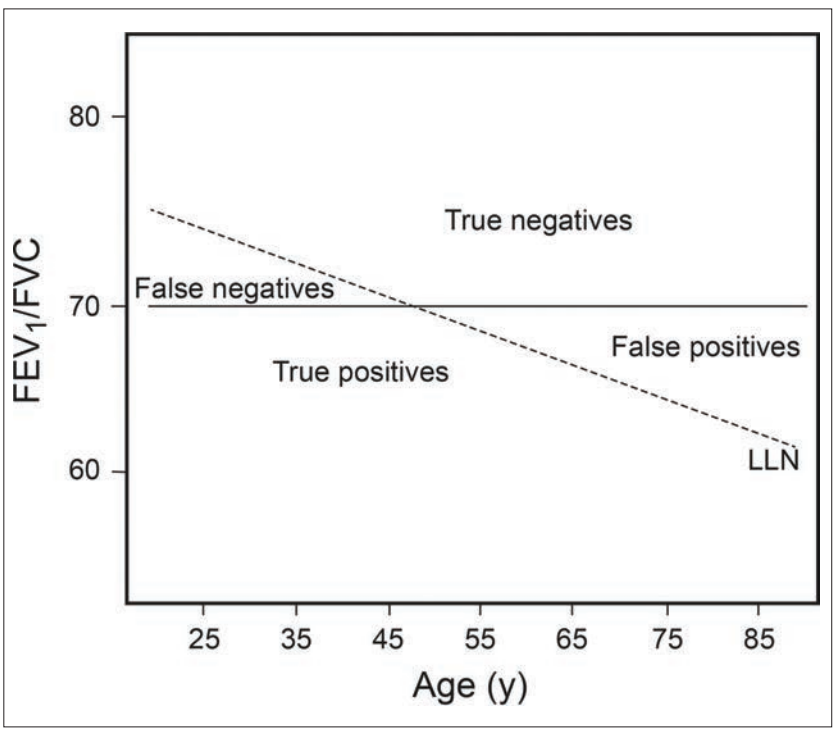


FIGURE 2
The change in predicted FEV_1/FVC with age illustrating underdiagnosis of COPD in younger adults aged less than 50-55 years (false negatives) and overdiagnosis in older adults (false positives)[13]

LLN = lower limit of normal

MANAGEMENT

Antibiotics

In December 2018 NICE also published a guideline specifically on antibiotic prescribing in acute exacerbations of COPD.[11] It recommends five days of treatment using amoxycillin, doxycycline or clarithromycin first and second line.

Antibiotics such as co-amoxiclav, levofloxacin and co-trimoxazole are reserved for specific organisms and circumstances.

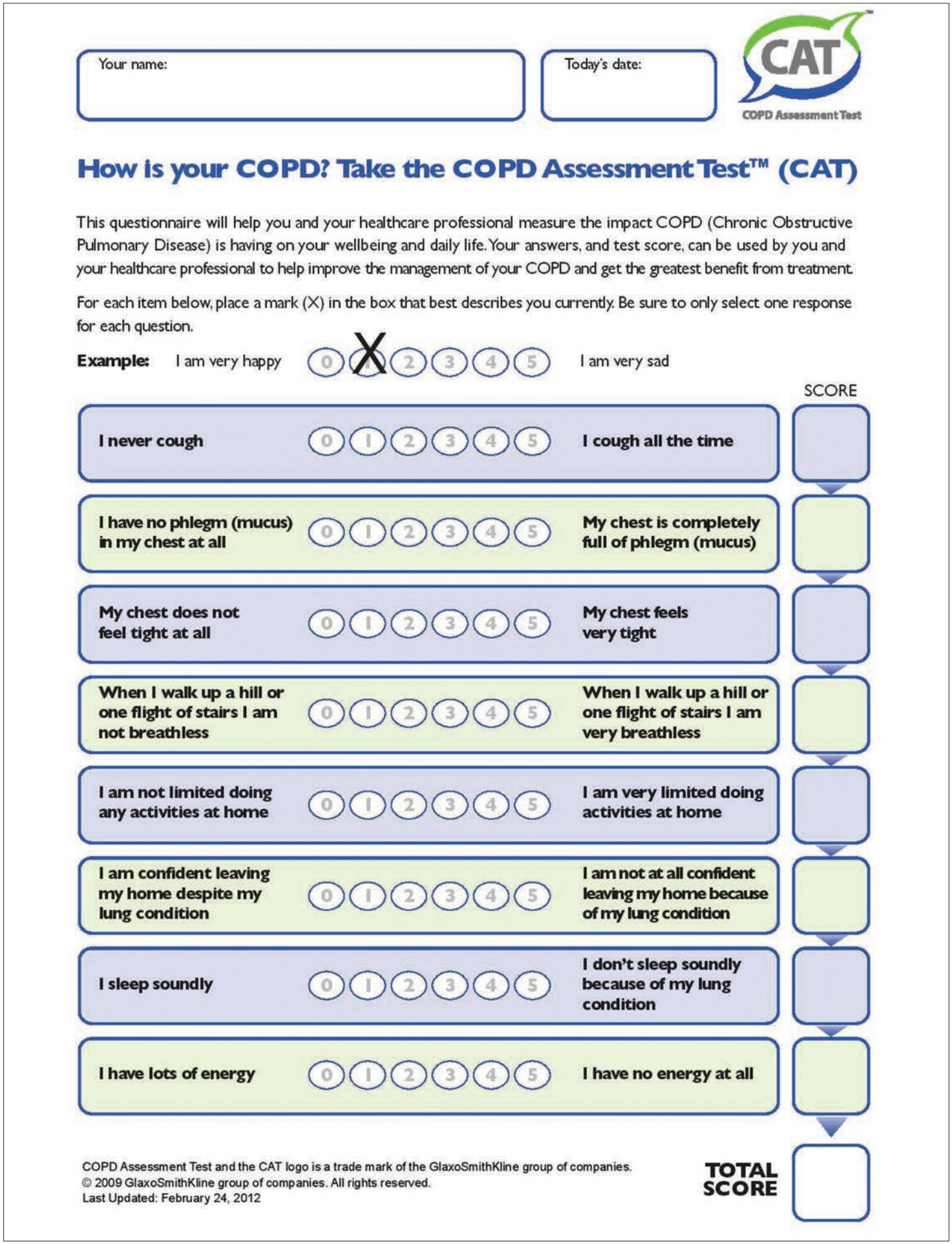
The guideline appropriately advises the use of antibiotics in circumstances where there is clear clinical evidence of an infection based on change in phlegm, in particular sputum colour but also an increase in volume.

It is particularly important that any clinician who prescribes and advises COPD patients about the use of emergency (rescue) packs emphasises that antibiotics are not required at the time of every exacerbation and use should be based on symptoms.

Inhaler technique

Inhaled therapy is the cornerstone of pharmacological treatment for COPD. There is evidence that instruction by a healthcare professional is a key component to an individual administering inhaled therapy correctly and that incorrect use of inhalers, in particular critical errors, are associated

FIGURE 3 The COPD Assessment Test (CAT) is a simple way to measure COPD related quality of life



Your name:

Today's date:

CAT
COPD Assessment Test

How is your COPD? Take the COPD Assessment Test™ (CAT)

This questionnaire will help you and your healthcare professional measure the impact COPD (Chronic Obstructive Pulmonary Disease) is having on your wellbeing and daily life. Your answers, and test score, can be used by you and your healthcare professional to help improve the management of your COPD and get the greatest benefit from treatment.

For each item below, place a mark (X) in the box that best describes you currently. Be sure to only select one response for each question.

Example: I am very happy 0 X 2 3 4 5 I am very sad

			SCORE
I never cough	0 1 2 3 4 5	**I cough all the time**	
I have no phlegm (mucus) in my chest at all	0 1 2 3 4 5	**My chest is completely full of phlegm (mucus)**	
My chest does not feel tight at all	0 1 2 3 4 5	**My chest feels very tight**	
When I walk up a hill or one flight of stairs I am not breathless	0 1 2 3 4 5	**When I walk up a hill or one flight of stairs I am very breathless**	
I am not limited doing any activities at home	0 1 2 3 4 5	**I am very limited doing activities at home**	
I am confident leaving my home despite my lung condition	0 1 2 3 4 5	**I am not at all confident leaving my home because of my lung condition**	
I sleep soundly	0 1 2 3 4 5	**I don't sleep soundly because of my lung condition**	
I have lots of energy	0 1 2 3 4 5	**I have no energy at all**	
		TOTAL SCORE	

COPD Assessment Test and the CAT logo is a trade mark of the GlaxoSmithKline group of companies.
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Last Updated: February 24, 2012

with more symptoms, poorer disease control, more exacerbations and more hospitalisations in COPD and asthma.[12]

Over the past few years, with a dramatic increase in the number and type of inhalers this has become more challenging and therefore arguably even more important. NICE emphasises that the smallest number of different devices should be prescribed.

Inhaler therapy

The key issue with respect to inhaler therapy in COPD is the use of inhaled corticosteroids (ICS). Unlike asthma, COPD is relatively poorly responsive to ICS and their role is to reduce exacerbation rate; hence, the recommendation for those patients with COPD who have two or more exacerbations per year and/or one or more episodes of hospitalisation.

The introduction of a number of long-acting beta-agonist/long-acting anti-muscarinic (LABA/LAMA) inhalers provides an alternative long-term inhaler option.

NICE has attempted to simplify inhaler prescription into three steps:

First, a short-acting bronchodilator, typically a short-acting beta-agonist (SABA), should be prescribed to all patients with COPD even if they are only used at the time of an exacerbation.

Second, for people with ongoing symptoms (breathlessness) and exacerbations, NICE recommends a LABA/LAMA with the option to use a LABA/ICS in those who have significant asthma. The latter includes a previous secure diagnosis of asthma, a higher blood eosinophil count, diurnal peak flow variation > 20% and substantial (> 400 ml) variation in FEV_1 over time. The lack of a more precise definition for some of these markers of asthma is expected to cause some difficulty during implementation.

Third, if breathlessness and exacerbations continue then use of a LABA/LAMA/ICS combination is appropriate which can be prescribed as a triple combination inhaler. NICE has yet to publish complete guidance concerning triple therapy but this recommendation is a reflection of the current research evidence and GOLD guidelines.

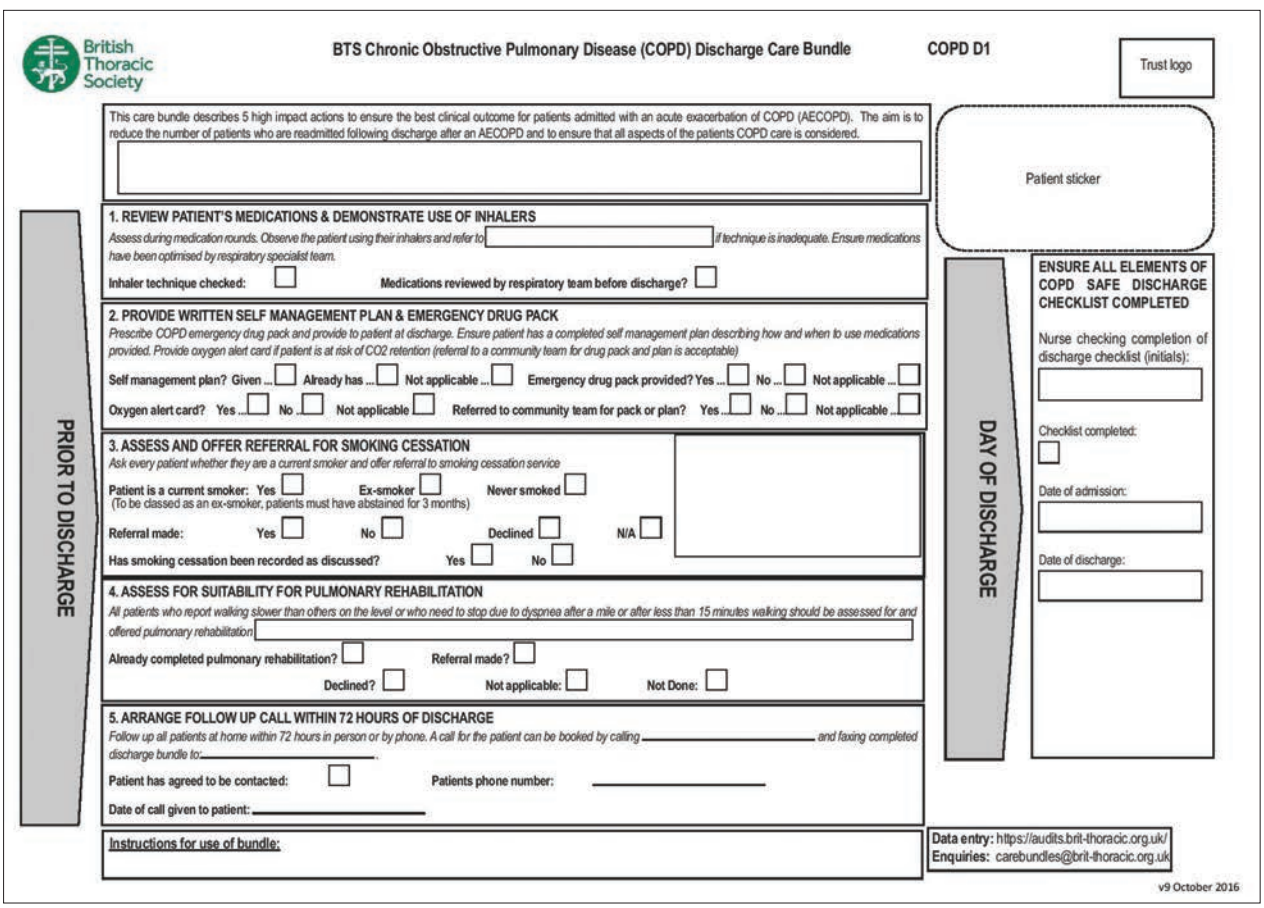
The basis for using ICS in COPD is to reduce exacerbation rate. However, it is necessary to balance increased risk of pneumonia against any benefit seen in reductions in exacerbations and this should be discussed with the individual. It is now established that when patients with COPD have exacerbations and a blood eosinophil > 300 cells/µl they are likely to benefit from ICS and this is recommended by the GOLD guideline.[6] However, it is less clear whether ICS should be prescribed in people with this higher eosinophil count and few exacerbations or how an eosinophil count of < 300 cells/µl should be used to guide treatment.

Oxygen

Long-term oxygen therapy reduces mortality in patients with COPD and chronic hypoxaemia. Ambulatory oxygen has a role in those who can walk further on formal testing using oxygen and are motivated to use it. However, oxygen is a potentially hazardous drug and there have been numerous safety alerts due to fires caused by ignition of oxygen, often related to smoking in the vicinity of oxygen. Relatively recently, a specific risk assessment was incorporated into oxygen assessment to attempt to reduce these risks.

The updated NICE guideline recommends that oxygen should only

FIGURE 4
British Thoracic Society COPD Discharge Care Bundle


British Thoracic Society

BTS Chronic Obstructive Pulmonary Disease (COPD) Discharge Care Bundle COPD D1

Trust logo

This care bundle describes 5 high impact actions to ensure the best clinical outcome for patients admitted with an acute exacerbation of COPD (AECOPD). The aim is to reduce the number of patients who are readmitted following discharge after an AECOPD and to ensure that all aspects of the patients COPD care is considered.

Patient sticker

PRIOR TO DISCHARGE

1. REVIEW PATIENT'S MEDICATIONS & DEMONSTRATE USE OF INHALERS
Assess during medication rounds. Observe the patient using their inhalers and refer to _____ if technique is inadequate. Ensure medications have been optimised by respiratory specialist team.
Inhaler technique checked: ☐ Medications reviewed by respiratory team before discharge? ☐

2. PROVIDE WRITTEN SELF MANAGEMENT PLAN & EMERGENCY DRUG PACK
Prescribe COPD emergency drug pack and provide to patient at discharge. Ensure patient has a completed self management plan describing how and when to use medications provided. Provide oxygen alert card if patient is at risk of CO2 retention (referral to a community team for drug pack and plan is acceptable)
Self management plan? Given ... ☐ Already has ... ☐ Not applicable ... ☐ Emergency drug pack provided? Yes ... ☐ No ... ☐ Not applicable ... ☐
Oxygen alert card? Yes ... ☐ No ... ☐ Not applicable ☐ Referred to community team for pack or plan? Yes ... ☐ No ... ☐ Not applicable ... ☐

3. ASSESS AND OFFER REFERRAL FOR SMOKING CESSATION
Ask every patient whether they are a current smoker and offer referral to smoking cessation service
Patient is a current smoker: Yes ☐ Ex-smoker ☐ Never smoked ☐
(To be classed as an ex-smoker, patients must have abstained for 3 months)
Referral made: Yes ☐ No ☐ Declined ☐ N/A ☐
Has smoking cessation been recorded as discussed? Yes ☐ No ☐

4. ASSESS FOR SUITABILITY FOR PULMONARY REHABILITATION
All patients who report walking slower than others on the level or who need to stop due to dyspnea after a mile or after less than 15 minutes walking should be assessed for and offered pulmonary rehabilitation _____
Already completed pulmonary rehabilitation? ☐ Referral made? ☐
Declined? ☐ Not applicable: ☐ Not Done: ☐

5. ARRANGE FOLLOW UP CALL WITHIN 72 HOURS OF DISCHARGE
Follow up all patients at home within 72 hours in person or by phone. A call for the patient can be booked by calling _____ and faxing completed discharge bundle to: _____.
Patient has agreed to be contacted: ☐ Patients phone number: _____
Date of call given to patient: _____

DAY OF DISCHARGE

ENSURE ALL ELEMENTS OF COPD SAFE DISCHARGE CHECKLIST COMPLETED
Nurse checking completion of discharge checklist (initials):
Checklist completed: ☐
Date of admission:
Date of discharge:

Instructions for use of bundle:

Data entry: https://audits.brit-thoracic.org.uk/
Enquiries: carebundles@brit-thoracic.org.uk

v9 October 2016

be prescribed to patients with COPD who do not smoke; a significant change from previous practice where it was often prescribed to smokers after a risk assessment.

Many COPD specialists are strongly opposed to this recommendation and the impact of this recent change is still far from clear. There are many other conditions where oxygen can be prescribed where this recommendation does not apply.

DISCHARGE CARE BUNDLES

The Best Practice Tariff (BPT) for COPD is payable by clinical commissioning groups to hospitals where specific measures concerning hospital COPD care are met. Hospitals have to submit details of every COPD hospitalisation to the National COPD Audit who report outcomes on which BPT payment is determined. The measures chosen are the proportion of people seen by a respiratory specialist within 24 hours of admission and use of a discharge care bundle; an example is shown in figure 4, opposite.

Fundamentally, this process is about delivering evidence-based interventions which are of proven benefit and is an outstanding example of using metrics to drive care quality improvement.

Previous publications on discharge bundles suggest an impact on COPD readmission[14] and improvement in care quality.[15] COPD discharge bundles emphasise checking and correcting inhaler technique as discussed earlier and promotion of self-management. The latter will not be successfully delivered by all, or perhaps even a majority of, patients with COPD but where successful it has a significant benefit including reducing rate of future hospitalisation.[16]

REFERRAL FOR SPECIALIST REVIEW

There are a variety of reasons why specialist review might be sought. First, it is appropriate if there is diagnostic uncertainty. This can include situations where there is a disconnect between physiology (spirometry) and symptoms or where multiple conditions causing similar symptoms may overlap and it is unclear what treatment is best, for example, a patient with regular phlegm production where a diagnosis of bronchiectasis is being considered.

Second, referral is appropriate where certain treatments are being considered such as lung volume reduction, prescription of oxygen therapy and transplantation.

Finally, individuals who have, or are suspected of having, alpha-1-antitrypsin deficiency are likely to benefit from specialist input. Table 1, below, lists some of the potential reasons for seeking specialist input recommended in the 2018 NICE guideline.[7] However, some of the other recommendations for referral suggested by NICE might be considered contentious by specialists (e.g. referral for consideration of long-term low-dose steroids) and few would consider specialist input necessary for referral for pulmonary rehabilitation.

IMPROVING OUTCOMES

The optimum way to improve COPD outcomes is to ensure that the diagnosis is made correctly and that patients are reviewed, at least annually, by a clinician trained to manage COPD.

Support with smoking cessation, delivery of pneumoccocal and annual influenza vaccination, pulmonary rehabilitation and provision of disease specific information to promote self-management are also key.

Optimisation of pharmacological therapy and management of comorbidity, in particular anxiety and depression, are vital. NICE recommends consideration of a cognitive behavioural component in the patient's self-management plan to »

Table 1

Indications for referral for specialist review in patients with COPD[7]

Diagnostic uncertainty	To confirm diagnosis
The individual requests a second opinion	To confirm diagnosis
Alternative diagnosis such as dysfunctional breathing	To exclude other diagnoses and assess the impact of multiple conditions
Symptoms disproportionate to lung function	To exclude other diagnoses and assess the impact of multiple conditions
Frequent lower respiratory tract infections and regular phlegm producer	To confirm or exclude bronchiectasis
Haemoptysis	To confirm or exclude other diagnoses (lung cancer, tuberculosis etc)
Assessment for oxygen including onset of cor pulmonale	Assessment for additional treatment
Assessment for lung volume reduction procedure	Assessment for additional treatment
Assessment for lung transplantation	Assessment for additional treatment
Rapid decline in lung function	Need to assess and attempt to arrest decline
Alpha-1-antitrypsin deficiency or COPD diagnosed before 40 years	For genetic counselling, potential sub-specialist national centre review and ongoing monitoring

key points

SELECTED BY

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An estimated 1.2 million people are living with chronic obstructive pulmonary disease (COPD) making it the second most common lung condition after asthma. Around 4.5% of people aged over 40 years have been diagnosed with COPD. It is predominantly a condition of older age and is most commonly diagnosed in the seventh to eighth decades.

COPD should be suspected in an older adult (at least 35 years old but typically more than 45 years old) who presents with symptoms such as breathlessness, wheeze, cough and sputum production and has one or more risk factors, typically current, or a past history of, cigarette smoking. A diagnosis should also be suspected when an individual with a risk factor develops a lower respiratory tract infection requiring treatment. COPD is far more common in smokers of heroin and crack cocaine, in whom it occurs at a younger age.

Diagnosis is made using post-bronchodilator spirometry in patients with relevant clinical features. An FEV_1/FVC ratio below 0.7 confirms the presence of persistent airflow limitation. However, the 2019 GOLD COPD guideline cautions against diagnosing COPD on the basis of a single post-bronchodilator FEV_1/FVC measurement of between 0.6 and 0.7 because of biological variation. A further problem is that use of a fixed FEV_1/FVC ratio leads to overdiagnosis of COPD in older individuals and underdiagnosis in younger people so missing the chance for early intervention. Hence an increasing number of respiratory laboratories are using the lower limit of normal to report airflow obstruction, but this is more complex to interpret.

A recent NICE guideline recommends that antibiotics should only be used for COPD exacerbations where there is clear clinical evidence of an infection, in particular a change in sputum colour but also an increase in volume. Amoxicillin, doxycycline and clarithromycin are first- and second-choice antibiotics and should be prescribed for five days. Antibiotics such as co-amoxiclav, levofloxacin and co-trimoxazole are reserved for specific organisms and circumstances. It is particularly important that any clinician who prescribes and advises COPD patients about the use of emergency (rescue) packs should emphasise that antibiotics are not required at the time of every exacerbation and use should be based on symptoms.

Referral for specialist review is appropriate where there is diagnostic uncertainty. This can include situations where there is a disconnect between physiology (spirometry) and symptoms, where multiple conditions causing similar symptoms may overlap and where regular sputum production suggests a diagnosis of bronchiectasis. Referral is appropriate where certain treatments are being considered such as lung volume reduction, prescription of oxygen therapy and transplantation. Individuals who have, or are suspected of having, alpha-1-antitrypsin deficiency should also be referred.

help manage anxiety and cope with breathlessness.

Furthermore, better organisation of care including joint working between primary and secondary care and use of admission prevention and early discharge schemes are important. Patients who are admitted should have early respiratory specialist review and a discharge care bundle.

Competing interests: None

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Useful information

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www.brit-thoracic.org.uk

British Lung Foundation
www.blf.org.uk

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