Managing and preventing acute exacerbations of COPD in the community

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Chronic obstructive pulmonary disease (COPD) is a term used to describe a progressive and irreversible decline in lung function which results in reduced airflow in the lungs. It includes two main diseases — chronic bronchitis and emphysema.

The symptoms of COPD include (National Institute for Health and Care Excellence [NICE], 2010):
- Breathlessness on exertion
- Chronic cough
- Regular sputum production
- Frequent winter 'bronchitis'
- Wheeze.

Unfortunately, 10% of patients only receive their diagnosis when they present in hospital as an emergency (British Lung Foundation [BLF], 2008). In terms of patient mortality, COPD accounts for between 25,000 to 30,000 deaths each year in the UK (Health and Safety Executive [HSE], 2014).

The condition imposes significant human and financial costs on society and yet it is still a largely invisible disease with most people in the UK not having heard of COPD or its symptoms (BLF, 2008).

Patients with COPD are prone to acute respiratory exacerbations of COPD (AECOPD), which vary in frequency and severity ranging from mild and self-limiting to fatal. An exacerbation of COPD is defined as a sustained worsening of the patient's symptoms beyond his or her usual stable state and/or normal day-to-day variations.

Patients experiencing an AECOPD report symptoms such as worsening breathlessness, cough, increased sputum production and a change in sputum colour (Sapey and Stockley, 2005; NICE, 2010).

AECOPD affects patient in terms of mortality and quality of life but it also has a huge socioeconomic impact, with an annual cost to the NHS of over £800 million — over 50% of this cost is attributed to secondary care management (NHS Medical Directorate, 2012).

Published data suggests that between 50% and 70% of exacerbations are due to respiratory infections including bacteria, atypical organisms and respiratory viruses; a further 10% are due to environmental pollution depending on the season and geographical location; and up to...
30% are of unknown aetiology (Sapey and Stockley, 2006). The common bacterium found in AECOPD are (Beasley et al, 2012):

- *Haemophilus influenzae*
- *Streptococcus pneumoniae*
- *Moraxella catarrhalis*.

**TREATMENT**

When it comes to the treatment of AECOPD, community nurses can play a pivotal role in the multidisciplinary team, identifying patients at risk of hospital admission and planning supportive measures that enable them to be nursed at home.

Community nursing teams are recommended as a potential resource in the provision of ‘hospital-at-home’ models of COPD care (British Thoracic Society [BTS], 2006). In the author’s experience, many members of the community team can contribute to the care of a patient with an AECOPD, including:

- GPs
- Respiratory consultants
- Respiratory nurse specialists
- Occupational therapists
- Community physiotherapists
- Pharmacists
- Social services
- Voluntary sector.

Collaboration as a team is vitally important to keep patients at the centre of care.

**Hospital versus home**

NICE (2010) provides guidance on factors to consider when assessing the need for hospital treatment versus home management.

COPD patients with severe breathlessness who have impaired consciousness, confusion, serious comorbidity or inadequate social support should be considered for admission to hospital and some may require non-invasive ventilation (BTS, 2006).

The standard treatment of AECOPD in the community setting includes:

- Steroids
- Oxygen if necessary.

The antibiotics recommended are penicillin, a macrolide or a tetracycline — the prescriber should be guided by knowledge of local pathogens and patterns of bacterial resistance. Guidelines on prescribing antibiotics in COPD are provided by local microbiologists and are based upon local pathogens and patterns of bacterial resistance.

Patients without any contraindication to oral steroids should be prescribed prednisolone 30mg for 7–14 days. The evidence suggests that prompt treatment reduces both recovery time and also subsequent mortality (Ram et al, 2006; Global Initiative for Chronic Obstructive Lung Disease [GOLD], 2015; NICE, 2010).

Community nurses can also use their knowledge of AECOPD to empower patients, encouraging them to recognise and report worsening symptoms such as increased breathlessness and/or wheeze, as well as changes in sputum colour and viscosity.

It is known that patients’ social and cultural, backgrounds are linked to concordance with medication (NICE, 2009; Latter, 2010). Providing information and support around medication may improve patients’ concordance and, subsequently, the outcome of AECOPD.

**Diet**

The provision of nutritional advice during and after AECOPD is vitally important and community nurses should be able to identify those patients at risk of malnutrition using screening tools during their community assessment, for instance the Malnutrition Universal Screening Tool (MUST) (visit: www.bapen.org.uk for more details).

During AECOPD it is essential that patients are adequately hydrated so that sputum has a high enough water content to be expectorated easily. Eating small amounts often and choosing soft, easy-to-eat foods also helps patients to eat while they are short of breath (Evans, 2012).

**Oxygen therapy**

Some patients may be on long-term oxygen therapy, which in the COPD patient is usually prescribed at 1–2 litres per minute. These patients should have a target oxygen saturation set by their oxygen prescriber. During AECOPD, it is important to work to this target as these patients are at risk of carbon dioxide retention and ‘turning up’ a patient’s oxygen to try and alleviate dyspnoea may actually cause harm.

In the community, blood gas analysis can help guide the safe management of patients on oxygen therapy and provides baseline information for oxygen prescribing during AECOPD. Blood gas analysis in the community may not be available in all areas, so community nurses should have access to a pulse oximeter (see below) to monitor oxygen saturations.

A good knowledge of target saturations and the confidence to know when a patient may be experiencing difficulties are paramount (O’Driscoll et al, 2008).

**Pulse oximetry**

Any community nurse reviewing a COPD patient should have access to a pulse oximeter and be trained in its use. A pulse oximeter is a small device that is placed upon a patient’s finger to measure the peripheral oxygen saturation of haemoglobin (SpO2), which in healthy people is over 95%.

The pulse oximeter works by comparing how much red and infrared light is absorbed by the blood and provides a percentage reading.

If community nurses use pulse oximetry as a routine part of their assessment they will know the patient’s baseline and be able to compare this with readings taken when he or she is acutely unwell. Any COPD patient with a haemoglobin measurement of less than 92% during a period of clinical stability should be referred to the local oxygen assessment service.
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Persistent coughing is a crucial sign of COPD and should not be ignored, especially if it has been present for any length of time. Smaller irritating coughs are easy for patients to ignore, but should still be investigated by the community nurse, e.g. questions asked about the duration of the cough; when it started; whether it is a ‘dry’ cough.

Side-effects of oxygen therapy include dry mouth and nasal soreness and advice on oral care and the use of water-based lubricants for the nasal mucosa may help with symptom management.

There are a number of companies that are commissioned to provide oxygen for the NHS and patients are issued with a useful booklet and a quarterly magazine by their supplier, which has important advice and information on the safe use of oxygen therapy as well as tips for users.

It is important that community nurses are alert to risks such as patients who continue to smoke while on oxygen therapy and those patients/carers who may unwittingly ‘turn up’ the oxygen—oxygen therapy is a prescribed medicine and, as with other drugs, the dose should not be increased unless prescribed as this may be harmful to some patients, i.e. those that retain carbon dioxide.

Nurses should also be aware of the potential for falls, where patients can trip over unsecured oxygen tubing.

Maintenance therapy
The prevention of AECOPD has become a primary goal of pharmacological treatment (NICE, 2010). The use of inhaled therapies prevents and reduces rates of AECOPD and includes long-acting beta-agonists (LABA), long-acting antimuscarinic antagonists (LAMA) and inhaled LABA-corticosteroid combinations (Aaron, 2014).

The NICE (2010) guideline offers comprehensive guidance on the management of COPD and well-informed nurses will be in a position to assist patients by supporting good inhaler technique.

Community respiratory teams can also serve as a useful resource for community nurses and taking time out to ‘shadow’ the respiratory team could form part of a nurse’s ongoing professional development.

Pulmonary rehabilitation
Pulmonary rehabilitation is an evidence-based, multidisciplinary intervention designed to reduce COPD symptoms, increase patients’ exercise capacity and improve their health status.

It is important that community nurses are familiar with any local pulmonary rehabilitation programmes so that they can discuss these with their patients and refer them into the service.

The patient education component of any pulmonary rehabilitation programme should be geared toward empowering patients with the knowledge and skills to self-manage their COPD (Laccase et al, 1999; BTS, 2001; Sun et al, 2013). Patients usually attend a twice-weekly 6–8-week programme and in some areas an adapted programme is offered in the patient’s home.

NICE (2010) suggests that some patients can be issued with self-management plans and standby antibiotics and steroids, but should always have access to a healthcare professional to provide support during an AECOPD.

If patients do have a home-based self-management plan, this is a useful resource for visiting community nurses as it will include important information about baseline observations and maintenance treatments.

Practical measures
There is good evidence that cold indoor temperatures are associated with increased morbidity and mortality in COPD (Public Health England, 2014). Patients should be advised on keeping the home warm — the optimum room temperature is around 21°C in the living room and 18°C in the bedroom (Public Health England, 2014).

Other advice includes wearing extra layers of clothing, covering the mouth with a scarf when going out to act as a filter for cold air, and generally being prepared and planning ahead for colder weather (BLF, 2013).

Ensuring that medication does not run out and keeping activity levels up are also key in proactive management.

Vaccinations
The community nursing team (particularly district nurses) already play a key role in the vaccination of chronically ill patients and can use their knowledge to empower patients to make informed choices around vaccination. The influenza vaccine has been found to reduce AECOPD as well as the rate and severity of respiratory influenza symptoms (Poole et al, 2006).

PALLIATIVE CARE
The COPD disease trajectory is difficult to predict and studies have shown that frequency of exacerbation is associated with mortality (Aaron, 2014).

The experience of AECOPD is often significant for patients, who may then want to discuss their fears and future wishes. It is also a time when nurses may consider patients’ prognoses and ask themselves ‘the surprise question’ included in the Gold Standards Framework (2011):

‘Would you be surprised if this patient was to die in the next few months, weeks or days?’

The Gold Standards Framework is a systematic, evidence-based approach to optimising care for all patients approaching the end of life. People who experience frequent exacerbations in the severe stage of their COPD may be approaching the end of life and recurrent AECOPD

RESPIRATORY CARE
as well as hospital admissions can be a poor prognostic indication. The literature suggests that current healthcare services do not meet the needs of end-of-life patients who have COPD, and that access to palliative care for this disease group is poor (Spathis and Booth, 2008).

For community nurses, an episode of AECOPD represents an opportunity to consider whether a patient is entering the transitional phase between palliative care and end of life. Similarly, any incidence of AECOPD provides the opportunity to consider the palliative care needs of COPD patients and their families.

If more COPD patients were treated according to the Gold Standards Framework, it would be easier for them to access palliative care specialist services with all the associated planning and coordination of care (Gold Standards Framework, 2011).

Breathlessness
Increased breathlessness (dyspnoea) is a common feature of AECOPD and the major cause of hospital admission in people with COPD (Suh et al, 2013). Alongside treating the original cause with oral antibiotics and steroids, the increased breathlessness experienced during AECOPD is usually managed by taking increased, regular doses of short-acting bronchodilators, either via nebuliser or hand-held inhalers with a spacer device, which can assist people with their inhaler technique. A spacer acts as a holding chamber for the dose of medication, as it can be difficult for people to coordinate operating the inhaler and inhaling at the correct flow (NICE, 2010).

There are many different types of inhaler devices available including pMDI (metered dose inhalers), DPI (dry powder inhalers) and soft mist inhalers. Nurses can help people to improve their inhaler technique and there are a number of online resources including those from the BLF and Asthma UK, which demonstrate good inhaler technique. Pharmaceutical companies also provide placebo and training devices, some of which whistle to indicate that the correct inspiratory rate has been achieved.

Sputum
The production and clearance of sputum is often a challenge for people with COPD. Mucolytics (drugs that help to breakdown and liquefy sputum) are available on prescription and can be very effective for some people. Another method of assisting patients to clear their chests involves nebulising hypertonic saline — here the saline is driven through a compressor turning it into a fine mist which helps to reduce the viscosity of the sputum and induces a cough to clear the chest. This is usually initiated by a respiratory nurse and/or physiotherapist who will also teach breathing techniques to assist in chest clearance. These techniques are known as the ‘active cycle’ of breathing (Kellet et al, 2005).

Other methods for the treatment of breathlessness during AECOPD that can be considered by the multidisciplinary team are the use of fan therapy, where a handheld fan directed at the face reduces the sensation of breathlessness (although the exact mechanism by which this reduces breathlessness remains unclear) (Galbraith et al, 2010).

Patients can also be taught to use a ‘purse-lipped’ breathing technique where they control exhalation by pursing the lips and concentrating on breathing out — this helps to lessen hyperinflation and the ‘trapping’ of air, as well as promoting breathing control.

Other relaxation techniques that can be used include listening to music and/or guided imagery, learning to practice mindfulness, and positive visualisation. People may need to try many relaxation techniques before finding one that suits them (Taylor, 2007).

CONCLUSION
There is much that community nurses can do to support patients with COPD through AECOPD and to optimise their care when stable. As well as acting as an advocate for patients, community nurses can ensure that their professional knowledge is updated to provide effective evidence-based care. The literature shows that there is significant work to be done to identify and support COPD patients through to end of life. In rural areas, for instance there are opportunities to remodel and better fund community nursing teams so that they can provide hospital-at-home services for people with chronic diseases such as COPD.

COPD is a leading cause of hospital admission and a key area for community service development. Investment in education and nursing leadership is vital to prepare the workforce to meet the healthcare demands of the future.

REFERENCES
BLF (2013) Keeping your lungs healthy. Available at: www.blf.org.uk/News/Detail/Keep-your-lungs-healthy-by-wrapping...

Five-minute test
Answer the following questions about this article, either to test the new knowledge you have gained or to form part of your ongoing practice development portfolio.
1 – What are the main symptoms of an acute exacerbation of COPD (AECOPD)?
2 – What do you understand by the term pulmonary rehabilitation?
3 – Why is breathlessness so important in AECOPD?
4 – What are the main treatment options for AECOPD?
5 – Name some of the inhaler devices currently available?
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