A nurse-led service for acute exacerbation of COPD

ONE IN FOUR of all hospital admissions is due to respiratory disease, and half of these are due to chronic obstructive pulmonary disease (COPD) (British Thoracic Society, 2001). The condition accounts for 9,800 bed days per year in the average UK health district (Calverley, 2000), and 28.1 per cent of emergency respiratory admissions nationwide (Department of Health, 2000). However, Wigan appears to have an increased prevalence of COPD: during 2000 and 2001 the condition accounted for 39.7 per cent of emergency respiratory admissions to Wigan Hospital.

Wigan’s nurse-led COPD service

In an attempt to reduce the use of hospital beds by patients with COPD and to improve the service to these patients, the Wigan COPD Acute Assessment Unit opened in November 1999, operating a nurse-led acute assessment and treatment model (see Box 1). The service offers home visits to remove the need for hospital admission and supported discharge to enable suitable patients to go home earlier than had previously been the case. An integral part of the service is a patient group direction (PGD), which was developed to enable nurses operating the at-home service to supply and administer appropriate drugs without having to refer to a doctor.

Patients suitable for referral to the at-home service are those presenting to a GP, A&E department or the medical assessment unit with an acute exacerbation of COPD. However, the COPD assessment team should review all patients with an acute exacerbation of COPD requiring hospital admission. The referral sources for November 1999 to July 2002 are shown in Fig 1. Between the service launch and July 2002 the team assessed 746 patients. Of these, 440 were suitable for the service (Fig 2).

Assessing the severity of COPD

The main indicator of the severity of air-flow limitation is the forced expiratory volume in one second $(FEV_1)$, recorded by performing spirometry (Fig 3). There are various levels of severity:

- $FEV_1 < 60$ per cent of predicted volume is classed as mild COPD;
- $40 < FEV_1 < 60$ per cent of predicted volume is classed as moderate COPD;
- $FEV_1 < 40$ per cent of predicted volume is classed as severe COPD (BTS, 1997).

The patient group direction

The PGD was developed before the launch of the COPD service to enable nurses to streamline the package of care to meet individual patient needs. It has also proved effective in facilitating earlier discharges as it prevents delays in obtaining prescriptions and waiting for dispensing, which can often take several hours.

A PGD is compiled of specific written instructions for the supply and/or administration of named medicines in an identified clinical situation. It applies to groups of patients who may not be individually identified before presenting for treatment. Senior doctors, pharmacists and other health professionals draw up PGDs locally (Cook, 2002).

Specialist nurses are authorised to supply and dispense medication as specified in the PGD provided they have the appropriate qualifications, knowledge and experience and following an appropriate period of observation. Authorisation is given to the specialist nurse by the lead respiratory physician; however the individual practitioner is responsible for maintaining his or her own competencies in accordance with the NMC Code of Professional Conduct (2002).

The specialist nurses must observe the guidance procedure when supplying and administering within a PGD:

- If in doubt, consult;
- If unfamiliar look for further references in the British National Formulary or ask the pharmacy; failing that consult with the lead respiratory physician or deputy;
- Be alert to any adverse reactions to drugs and report these to medical staff and the pharmacist;
- Only supply and/or administer appropriate and authorised amounts;
- Do not issue medication that will not be fully used;
- Only supply and/or administer in accordance with the agreed practices listed in the treatment direction;
- Record treatment in the medical records.

BOX 1. THE WIGAN MODEL FOR AT-HOME TREATMENT OF COPD

- The Wigan model incorporates COPD acute assessment and early discharge. The service is specialist nurse-led and takes referrals from GPs, the A&E department and the medical assessment unit.
- Specialist nurses instigate investigations and perform a clinical assessment; suitable patients are discharged with treatment dispensed and administered by the nurse and are visited at home for two weeks.
- The early discharge service was established in 2002 and offers supported discharge for poorly patients in the acute phase and those with bronchiectasis.
- Patients also attend nurse-led clinics six weeks after discharge. These incorporate long-term oxygen assessment with six-monthly follow-up and
In accordance with Department of Health guidelines (2000), the PGD was drawn up by a multidisciplinary group, which consisted of a respiratory physician, a consultant microbiologist, a senior pharmacist and specialist nurses. It was then approved by the drugs and therapeutics committee.

The guidelines state that there must be comprehensive arrangements for the security, storage and labelling of all medicines (DoH, 2000), and this was attended to as follows. The nurse’s name, patient details and medicines dispensed are recorded on patient identifiers in the form of a standard preprinted drugs-dispensed form. The drugs are supplied in prepacks by the pharmacy for secure storage in the COPD unit. There is a secure system for recording and monitoring medicine on a named-patient basis on the preprinted dispensing form.

The EC Labelling and Leaflet Directive 92/27 applies to all supplies of medicine including those supplied under PGDs. The drugs and therapeutics committee ensure that all the trust’s PGDs are consistent with the summary of product characteristics and any available, relevant guidance from the National Institute for Clinical Excellence.

Drugs dispensed by COPD specialist nurses

Therapy in the two-week ‘at home’ phase is under the direct supervision of the COPD specialist nurses. A number of drugs can be dispensed on the PGD.

Bronchodilators

High-dose bronchodilator therapy for a period of two weeks, using one of the following, depending on the patient’s current treatment and severity of exacerbation:

- Salbutamol 120mcg/ipratropium bromide 20mcg, combined metered dose inhaler (MDI) four puffs via a large volume spacer, four-to-six-hourly up to a maximum of six puffs;
- Salbutamol 2.5mg/ipratropium bromide 500mcg combined nebulisers;
- Salbutamol 5mcg mixed with ipratropium bromide 500mcg four-to-six-hourly.

For example, a patient on existing combined nebuliser therapy would be dispensed salbutamol 5mcg and ipratropium bromide 500mcg during the acute exacerbation phase. The subjective and objective responses to high-dose bronchodilator therapy are monitored, using spirometry and peak flow if combined therapy is commenced and deemed beneficial in the long term.

The GP is informed of this as well as any changes in medication or device that may improve the patient’s quality of life or compliance.

Corticosteroids

- Prednisolone 40mg immediate (stat) dose;
- Followed by 40mg for a further six days, which is then reduced by 5mg daily to zero or down to the previous maintenance dose.

Antibiotics

- Oxytetracycline 500mg four times a day for seven days;
- Trimethoprim 200mg twice a day for seven days.

The treatment of patients who were commenced on alternative antibiotics while in hospital is discussed with a senior doctor to ascertain whether that treatment should be continued. All patients are encouraged to provide a sputum specimen, to ensure they receive the appropriate treatment and to facilitate external audit.

Caution should be exercised relating to antibiotic microbial resistance as this is a major concern in health care (DoH, 2000). The guidelines state that the drugs and therapeutics committee should ensure that PGDs involving antibiotics adhere with local policy and are subjected to regular external audit. In Wigan, ongoing external audits are conducted on sputum culture and sensitivity; the most prevalent species has been found to be *Haemophilus influenzae*, and the most common sensitivity is to tetracycline.

Oxygen

Support and advice regarding the use of oxygen at home is given, where necessary, using patients’ own oxygen concentrators and/or cylinders.

For patients with a partial pressure of oxygen (P02) of less than 8kPa on initial assessment (the normal range is 12–15kPa) who do not have home oxygen, have blood gases repeated six weeks postexacerbation. If they
remain hypoxic they are assessed for long-term oxygen therapy in accordance with the British Thoracic Society COPD guidelines (BTS, 1997).

Patients with Type II respiratory failure and acidosis on oxygen during the acute hospital phase are assessed six weeks postexacerbation. Treatment recommendations on future oxygen management are given to the patient and his or her GP by the lead respiratory physician. At this stage the patient may be given an oxygen alert card: a patient-held wallet-sized card that is given to those with Type II respiratory failure and respiratory acidosis on high-flow oxygen.

**Instigation of inhaled steroids**

At two-week discharge, when the patient has completed a two-week course of high dose prednisolone as part of the initial treatment regimen, spirometry is repeated. Audit found that 10 per cent of patients showed significant reversibility at this stage, indicating a degree of reversible airway obstruction or an element of asthma.

After discussion with the patient and extensive history taking with regard to symptoms and past treatments, the GP will be advised to either increase suboptimal doses of inhaled steroid or, for patients not already receiving it, to commence inhaled corticosteroids, if appropriate at this stage.

The patient, meanwhile is advised to monitor symptoms and peak flow. At the six-week review if the GP has not followed recommendations, and there is decline in spirometry and symptoms, the specialist nurse will either initiate inhaled steroids or arrange for the patient to be reviewed by a respiratory physician. The consultant and GP are informed of any changes made to the patient’s management.

Due to the success of the PGD in acute COPD management, it is to be extended to include:

- Salmeterol and fluticasone combined inhaler;
- Salbutamol inhaler;
- A wider range of spacer devices.

The aim is to offer a wider choice of inhalers for patients, and to assist with dexterity, symptom control and compliance.

**Compliance**

The cases of patients who are unable to comply with the PGD are discussed with the respiratory physician who may prescribe an alternative treatment regimen. The specialist nurses do not accept patients for the home service if they refuse to comply with treatment. If patients do not agree to accept nurses’ advice initially, it is unlikely that they will comply with the medication once at home, and are more likely to be re-admitted in the two-week supported period.

**Evaluation**

The service has been evaluated in a number of ways:

- An ongoing survey of patient satisfaction questionnaires undertaken by the COPD team has shown that most of the patients are happy with the service and find it beneficial to have acute episodes managed at home;
- Living arrangements have also been evaluated (Fig 4);
- A survey of GPs in the district confirmed that 94 per cent found the service good or excellent.

**Conclusion**

The specialist nurse’s authority to practise autonomously with the continuing support of the lead respiratory physician – available for advice at all times, are vital elements to the success of the at-home service. The specialist nurse’s ability to supply and administer individual treatment packages within a PGD ensures that patients receive appropriate therapy during the acute phase, and therefore a safe, effective discharge and recovery.

Nurses supplying and/or administering within this field require an extensive knowledge of COPD, its management and the therapy required to care for these patients safely and effectively within a nurse-led service. Education regarding compliance with medication, inhaler technique, coping strategies and issues around their condition and the disease process are key to the success of patients being cared for in their homes.