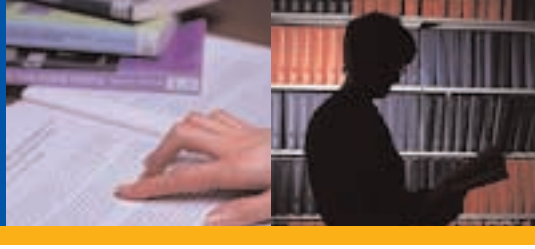

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Assessment of a breathless patient

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in brief

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Summary
This article discusses a systematic approach to the assessment of a breathless patient and outlines the principles of oxygen delivery. The indications for oxygen administration, different methods of delivery and the nursing management of oxygen therapy are examined.

Key words
- Respiratory system and disorders
- Oxygen therapy

These key words are based on the subject headings from the British Nursing Index. This article has been subject to double-blind review.

Aims and intended learning outcomes

The aim of this article is to describe a systematic and comprehensive approach to the assessment of a breathless patient and to discuss the principles of oxygen delivery. After reading this article you should be able to:

- Describe how to assess the effectiveness of breathing, the work of breathing and the adequacy of ventilation.
- Discuss the importance of general appearance, medical and social history and characteristics of breathlessness.
- Discuss the methods of oxygen delivery.
- Outline the nurse's role and responsibilities in the administration of oxygen.

Introduction

Whatever area of nursing you are working in you will encounter patients with various respiratory conditions. These conditions can be primary or secondary, acute or chronic, and providing excellent nursing care for this group of patients is challenging and rewarding. The symptoms of respiratory disease can be trivial or extremely distressing for the patient; either might indicate a serious or a life-threatening disease (Johnson 1987). It is important to undertake an accurate assessment of a breathless patient, so that the most appropriate nursing care and treatment can be administered and evaluated effectively. Definitions of some of the main respiratory conditions are listed in Box 1.

The familiar 'look, listen and feel' approach (ERC 1998) can be used to evaluate the effectiveness of breathing, the work of breathing and the adequacy of ventilation. It is also important to consider the patient's general appearance, background medical history, any presenting symptoms and the characteristics of his or her breathlessness. As well as being able to recognise when a patient's respiratory status is compromised, you should also be familiar with the principles of oxygen delivery. The main causes of dyspnoea (breathlessness) are listed in Box 2.

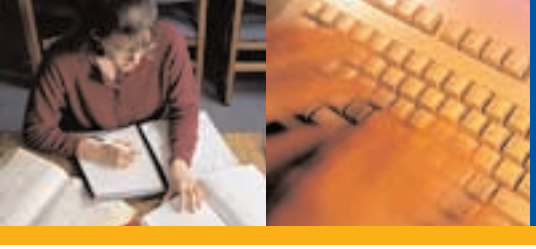
TIME OUT 1

Reflect on patients you have cared for with respiratory distress and list the main causes of their breathlessness.

Assessment of a breathless patient

Effectiveness of breathing This can be assessed by monitoring the patient's chest movement, air entry and oxygen saturation. Chest movement should be equal, bilateral and symmetrical. The depth of inspiration and any changes in frequency should also be recorded on the observation chart. Air entry should be assessed by observing, listening to and feeling the chest. Breath sounds should be bilateral and audible in all lung zones. Arterial oxygen saturation can be monitored using pulse oximetry. Although this procedure is useful for monitoring hypoxaemia, it has limitations as it does not measure the level of carbon dioxide retention which reflects the effectiveness of ventilation (Jevon and Ewens 2000). Monitoring of end tidal CO_2 levels can provide a continuous guide to the adequacy of ventilation, but can be unreliable when lung pathology is abnormal (Drew *et al* 1998).

Work of breathing Healthy spontaneous breathing is quiet and accomplished with minimal effort. The amount of energy expended on breathing depends on the rate and depth of breathing, airway resistance and the ease with which the lungs can be expanded. Signs of



Respiratory system and disorders

increased work of breathing include an increase in respiratory rate, noisy respiration and the use of accessory muscles such as the abdominal muscles. The patient can become physically and mentally exhausted and might complain of generalised back pain. If the patient becomes too exhausted, he or she might need increased assistance with breathing, and if the condition continues to deteriorate, mechanical ventilation might be considered as a last resort. The respiratory rate in adults is approximately 12 breaths per minute, however, breathless patients can experience different breathing patterns:

- Tachypnoea is an abnormally rapid rate of breathing (>20 breaths per minute) (Torrance and Elley 1997) and is usually one of the first indications of respiratory distress.
- Bradypnoea is an abnormally slow rate of breathing (<12 breaths per minute) (Torrance and Elley 1997), which can indicate severe deterioration in the patient's condition. Possible causes include fatigue, hypothermia, central nervous system (CNS) depression and drugs such as opiates.
- Orthopnoea is a condition in which the person must stand or sit in an upright position to breathe comfortably. It can occur in many conditions including asthma, pulmonary oedema and emphysema.
- Cheyne-Stokes respiratory pattern – periods of apnoea alternate with periods of hyperpnoea. Causes include left ventricular failure and cerebral injury, and it is sometimes seen in patients at the end stages of life.
- Kussmaul breathing (air hunger) – deep rapid respirations due to stimulation of the respiratory centre in the brain caused by metabolic acidosis, for example, ketoacidosis or renal failure.
- Hyperventilation – often associated with anxiety states.

Noisy respiration is characterised by different sounds. Stridor, or 'croaking' respiration, is a high pitched sound usually occurring on inspiration and is caused by laryngeal or tracheal obstruction, such as the presence of a foreign body, laryngeal oedema or laryngeal tumour. Turbulent flow of air through narrowed bronchi and bronchioles causes a noisy musical sound termed 'wheeze', which is more pronounced on expiration. Wheeze is audible in asthma, chronic bronchitis and emphysema. A 'rattly' chest is caused by pulmonary oedema or sputum retention and a gurgling sound results from the presence of fluid in the upper airway. In an unconscious patient, snoring sounds might be associated with the tongue blocking the airway.

Adequacy of ventilation The assessment of heart rate, skin colour and the patient's mental status can help to provide an indication of the adequacy of ventilation. Hypoxaemia can have the following effects:

- Heart rate – the breathless person will experience tachycardia initially (a non-specific sign), but severe hypoxia can cause bradycardia.
- Skin colour – the skin will appear pale as hypoxia causes catecholamine release and vasoconstriction. While central cyanosis might be 'constant' if the patient has congenital heart disease or chronic obstructive pulmonary disease (COPD), cyanosis in other patients is often a late sign of hypoxia. It is important to remember that if the patient is anaemic, cyanosis might not be present even when hypoxia is severe.
- Mental status – symptoms include agitation, drowsiness, confusion and impaired consciousness.

TIME OUT 2

Reflect on a breathless patient you can remember caring for. How did you assess the effectiveness of breathing, the work of breathing and the adequacy of ventilation? Based on what you have read so far, describe how you could improve this assessment?

General appearance Assessing the patient's physical appearance can provide valuable additional information. Finger clubbing might indicate pulmonary or cardiovascular disease. Classical features include loss of nail bed angle, an increased curvature of the nail and swelling of the terminal part of the digit (Johnson 1987). The chest is bilaterally symmetrical, but disease of the ribs or spinal vertebrae as well as an underlying lung disease can distort the shape. Lung movement can be severely restricted in kyphosis (forward bending) or scoliosis (lateral bending) of the vertebral column. A barrel chest is sometimes associated with chronic bronchitis and emphysema. Halitosis can indicate poor oral hygiene, but could be a sign of upper respiratory tract infection. Breathless patients will sometimes be frightened and are often anxious.

Medical and social history

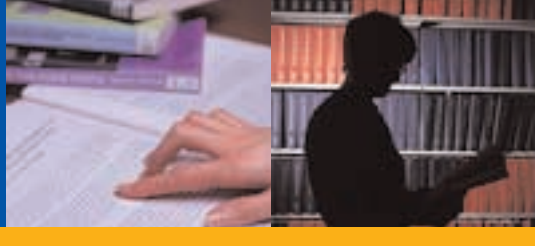
All previous illnesses, operations, hospital admissions and investigations should be noted, particularly those that are related to respiratory function. It is important to establish whether the patient has been prescribed or is currently

Box 1. Definitions of respiratory conditions

- Bronchiectasis: chronic, irreversible dilation of the bronchioles; the alveolar sacs become dilated and filled with large quantities of offensive pus. It is characterised by a productive cough, expectoration of mucopurulent sputum, halitosis and enlargement of the air passages
- Atelectasis: collapse of a lung or part of a lung due to occlusion of a bronchus or bronchiole, resulting in a partial or complete airless state of the lung. Causes include tumour, mucous plug and inhalation of a foreign body
- Asthma: a disease characterised by recurrent paroxysmal attacks of dyspnoea; may be associated with wheezing, cough, sense of suffocation or constriction in the chest. It is caused by bronchiolar constriction and inflammation, often allergic in origin
- Emphysema: a non-reversible chronic disorder of the lungs often caused by smoking. It is characterised by the breakdown of septal walls between the alveoli, destruction of the connective tissue that facilitates the elastic recoil of the lungs and distension of the alveoli
- Chronic obstructive pulmonary disease: pulmonary disease of uncertain cause, characterised by persistent interference with airflow during expiration

Source: *Blackwell's Dictionary of Nursing* (1994)

Respiratory system and disorders



Box 2. Causes of dyspnoea

- Respiratory: asthma, COPD, pneumonia, tuberculosis, pleural effusion, pneumothorax, carcinoma of the lung, pulmonary embolism, and mechanical problems such as fractured ribs and flail segment
- Cardiac: left ventricular failure, pulmonary oedema, congestive cardiac failure
- Neuromuscular: Guillain-Barré syndrome, myasthenia gravis and muscular dystrophy
- Pregnancy
- Obesity
- Diabetes: hyperventilation in ketoacidosis
- Anaemia
- Central nervous system: head injury, raised intracranial pressure, drugs such as opiates
- Aggravating factors: exercise, cold air, smoking and coughing

Box 3. Assessing breathing difficulties

- Can the patient talk with ease?
- Does breathlessness affect the patient's activities of daily living?
- How far is the patient able to walk without stopping?
- Can the patient climb the stairs?
- Does it affect the patient's job?
- Does the patient suffer from orthopnoea? If so, how many pillows does he or she require to sleep at night?
- Do certain activities precipitate breathlessness?
- Does the patient have oxygen at home?

receiving any respiratory medication, such as bronchodilators or oxygen therapy. The frequency and effectiveness of the medication should be recorded. Any history of respiratory disease in the patient's family should be documented. When assessing respiratory disease, an occupational history should be recorded to include past and present occupations. Exposure to dust, asbestos, coal and animals could also be a significant factor in respiratory difficulties.

Obtaining a social history should include information on whether the patient smokes and past and present consumption. Exposure to tuberculosis or *Legionella pneumophila* should be noted. The patient's living accommodation can be significant, for example, a damp environment, stairs or a lift that is out of order in a block of flats. Patients who have recently arrived from the Asian sub-continent could have been exposed to tuberculosis. Any allergies should also be documented.

The patient's age might also be important in assessing respiratory status. Certain respiratory diseases are more likely to occur in particular age groups. Asthma, pneumothorax, cystic fibrosis and congenital heart disease are more common in patients under 30 years of age. Chronic bronchitis, COPD, carcinoma of the lung, pneumoconiosis and ischaemic heart disease usually occur in those over 50.

Characteristics of breathlessness

Accurate assessment of the characteristics of each individual's breathlessness, including the severity, timing, related chest pain, cough and sputum, not only helps to determine the most appropriate treatment, but also aids diagnosis. These characteristics will vary from patient to patient depending on the cause of breathlessness and will provide valuable baseline information. The nurses can use this information to inform further patient assessments and monitor the patient's progress or deterioration. All observations made on assessment should be carefully recorded in the patient's nursing records.

Severity It is important to establish the severity of the patient's breathlessness and to evaluate the impact of difficulty in breathing on the patient's usual activities of daily living. The questions outlined in Box 3 could be useful in assessing the severity of breathing difficulties.

Timing Severe asthma and left ventricular failure are experienced more commonly at night. Occupation-related asthma is worse when the patient is at work and generally improves at home. Bronchitis is more common in the winter months. Certain activities can also precipitate the patient's breathlessness.

Chest pain Respiratory chest pain is usually sharp in nature and is aggravated by deep breathing or coughing. It is often localised to one particular area of the chest.

Cough A cough is a common respiratory symptom and occurs when a deep inspiration is followed by an explosive expiration. A cough that is worse at night is suggestive of asthma or heart failure, while a cough that is worse after eating is suggestive of oesophageal reflux. The timing and duration of the cough is important. Different types of cough are listed in Box 4.

Sputum Sputum is a clinical feature of respiratory disease and can provide valuable information for assessing the breathless patient. If sputum is produced, the colour and consistency should be recorded (Box 5).

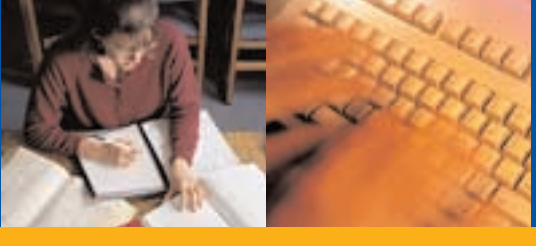
A number of important co-existing clinical features can be associated with respiratory problems. Fever might be a symptom of respiratory infection. Poor appetite and weight loss could be indicative of carcinoma of the lung or chronic infection. A swollen and painful calf is a common symptom in patients with deep vein thrombosis or pulmonary embolism, and ankle oedema can occur with congestive cardiac failure or deep vein thrombosis. Palpitations can result from fear or anxiety and the patient might be experiencing cardiac arrhythmias.

TIME OUT 3

Referring to the patient you considered in Time Out 2, or to a patient you are currently in contact with, identify any aspects of his or her general appearance, medical and social history, characteristics of breathlessness or important co-existing clinical features that would be relevant to the assessment.

Principles of oxygen delivery

The correct administration of oxygen can be a life-saving procedure for breathless patients, but care should be taken as oxygen toxicity (oxygen overdose) can result in pathologic tissue changes. Research has shown that oxygen is often administered without careful evaluation of its potential benefits and side effects (Bateman and Leach 1998). Oxygen should be considered as a drug (BMA 2000), and there are clear indications for its administration and mode of delivery. Inappropriate dose and failure to monitor treatment can have serious consequences



(Bateman and Leach 1998). To ensure safe and effective treatment, oxygen prescriptions should include the flow rate, delivery system, duration and monitoring of treatment (Bateman and Leach 1998). Sometimes oxygen will need to be administered in an emergency, for example, during cardiac arrest, or before the arrival of medical help, and local policies should stipulate when oxygen that has not been prescribed can be administered by nursing staff.

Indications of oxygen administration Oxygen can be delivered to treat hypoxaemia (deficiency of oxygen in arterial blood), to decrease the work of breathing or reduce myocardial workload. Specific indications include cardiac or respiratory arrest, hypotension, shock, respiratory distress, angina/myocardial infarction and anaphylaxis. Oxygen should never be withheld from a patient who is obviously hypoxic.

Methods of oxygen delivery

All oxygen delivery systems have the following components:

- Oxygen supply – a portable cylinder that is universally coloured black with a white top and marked 'oxygen'.
- Flow meter – a device that determines the flow rate of oxygen in litres/minute.
- Oxygen tubing – this connects the oxygen source to the delivery device, usually green.
- Delivery device – oxygen mask or nasal cannulae.
- Humidifier – sometimes used to warm and moisten oxygen during administration.

The method of oxygen delivery depends on the concentration of oxygen required, the patient's compliance with therapy and the underlying pathophysiology. There are a number of different masks and oxygen delivery devices on the market; you should be familiar with the particular ones in your clinical area.

Nasal cannulae Nasal cannulae or nasal prongs are safe and easy to use, disposable, prevent rebreathing and are comfortable for long periods. Oxygen is delivered through plastic cannulae in the patient's nostrils. An advantage is that the administration of oxygen can continue while the patient is eating or talking. Nasal cannulae or prongs are less claustrophobic than conventional masks and, as a result, are often well tolerated by patients.

It is possible to deliver oxygen percentages of 24-44 per cent at flow rates of 1-6 litres/minute (approximately 4 per cent above room air concentration per litre), although oxygen flow rates in excess of 4 litres/minute might cause patient discomfort, headaches and dry mucous membranes (Lifecare 2000). The percentage of oxygen actually inhaled by the patient will be reduced by mouth-breathing. Guidelines are listed in Box 6.

Local irritation and dermatitis can occur with high flow rates. Undue strain on the tubing can irritate the nose and sores can develop on top of the ears where the tubing lies. Lubricating jelly might help to relieve a sore nose, but it is not advisable to use soft white paraffin as it is flammable, can block the cannulae and irritate the mucosa (Dunn 1998).

Venturi oxygen masks This mask is connected to a Venturi device, which mixes a specific volume of air and oxygen. Venturi masks are useful for accurately delivering low concentrations of oxygen. The Venturi valves are colour coded and the flow rate of oxygen required to deliver a fixed concentration of oxygen is shown on each valve. The main advantage of these devices is that they deliver accurate concentrations of oxygen despite the patient's respiratory pattern. Oxygen concentrations of between 24 per cent and 60 per cent can be delivered with this system. The masks are reasonably comfortable to wear, but oxygen concentration can be altered if the mask is too loose or not correctly fitted. Care should be taken to check that the oxygen tubing is not kinked or that the oxygen intake ports are not blocked. Guidelines are listed in Box 7.

When administering oxygen via a facemask you should ensure that it fits snugly around the nose, otherwise oxygen might blow into the patient's eyes leading to discomfort and possible damage (Hogston and Simpson 1999).

Medium concentration oxygen masks Masks that administer medium concentrations of oxygen are useful because the percentage of oxygen administered is flexible and easy to adjust. Simply adjusting the oxygen flow rate can accurately alter the oxygen concentration delivered to the patient: 2 litres = 29 per cent; 4 litres = 40 per cent; 6 litres = 53 per cent; and 8 litres = 60 per cent; guidelines for use are as for Venturi masks.

Non-rebreathe masks Non-rebreathe masks allow the delivery of very high concentrations of oxygen, approximately 95 per cent at flow rates of 12 litres/minute (AHA 1997). The reservoir bag contains a one-way valve to prevent exhaled air entering the oxygen reservoir bag. On inhalation, the one-way valve opens which directs oxygen from a reservoir bag into the mask, thus the patient breathes air from the reservoir bag only. In addition, one-way valves

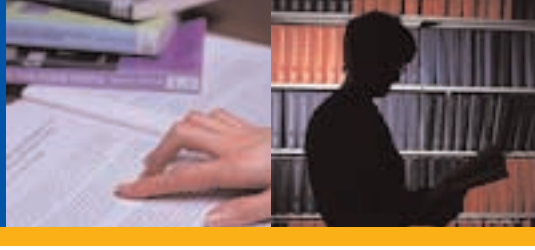
Box 4. Types of cough

- Sudden cough might be caused by a foreign body
- Recent cough might be caused by a chest infection
- Chronic cough associated with a wheeze could be caused by asthma
- Irritating chronic dry cough might be associated with oesophageal reflux
- Chronic cough plus the production of large volumes of purulent sputum might be due to bronchiectasis
- Change in the character of a chronic cough could be indicative of the development of a serious underlying problem such as carcinoma of the lung

Box 5. Assessing sputum

- White mucoid sputum is evident in asthma and chronic bronchitis
- Purulent green or yellow sputum might indicate respiratory infection
- Blood can be an indication of carcinoma of the lung or pulmonary embolism
- Frothy white or pink sputum is evident in pulmonary oedema
- Thick, viscid sputum is a feature of severe or life-threatening asthma (Rees and Price 1999)
- Thin, watery sputum is associated with acute pulmonary oedema (Middleton and Middleton 1998)
- Foul smelling sputum is an indication of respiratory tract infection

Respiratory system and disorders



Box 6. Guidelines for nasal cannulae

- Insert the nasal prongs into the nostrils
- Place the two small tubes over the patient's ears and under the chin
- Adjust the plastic slide until the cannula fits securely and comfortably
- Attach to oxygen source and adjust the flow rate as prescribed by the physician

(Lifecare 2000)

Box 7. Guidelines for Venturi masks

- Select the appropriate Venturi valve, ensure that it is set for the desired fraction of inspired oxygen and connect it to the mask
- Connect the mask to the oxygen source using oxygen tubing
- Adjust the flow rate to achieve the desired oxygen concentration as prescribed by the physician
- Place the mask over the patient's face and adjust the elastic for a secure fit

(Lifecare 2000)

Box 8. Guidelines for non-rebreathe masks

- Connect the mask to the oxygen source using oxygen tubing
- Select an appropriate oxygen flow rate to achieve the desired oxygen concentration as prescribed by the physician. This will usually be 15 litres/minute to achieve 90-100 per cent oxygen concentration
- Place the mask over the patient's face and adjust the elastic to obtain a secure fit
- Ensure that the flow rate is sufficient to keep the reservoir bag at least a third to a half full at all times

(Lifecare 2000)

are located in the side ports of the mask to prevent room air entering the mask. A tight seal is required, which can be difficult to maintain and uncomfortable for patients.

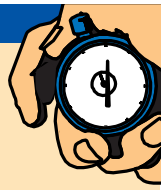
Therefore, these devices are only suitable for short-term therapy. It is important to ensure that the reservoir bag can expand freely and is not twisted or kinked. Oxygen flow rate should be sufficient to keep the bag inflated. Guidelines are listed in Box 8.

Humidification

Humidification of oxygen is recommended because piped and cylinder oxygen is dry and can cause the mucous membranes lining the respiratory system to become dry. Lack of humidification can also result in tenacious sputum and sputum retention. Inflammation of dry mucous membranes can also occur causing excessive production of mucous.

Humidification is recommended if a patient is receiving more than 4 litres/minute of oxygen via a mask or if oxygen is being delivered directly into the trachea, such as via a tracheostomy tube (Bateman and Leach 1998). Most humidifiers have devices to enable the delivery of the required concentration of oxygen and should always be used according to manufacturer's specifications.

TIME OUT 4



Check which oxygen delivery devices are available in your clinical area. Read the manufacturer's instructions and relevant nursing information regarding their use. Find out what percentage of oxygen can be delivered using this equipment and check the recommended number of litres of oxygen per minute.

Nursing responsibilities

Regardless of the delivery method, one of your main roles in oxygen therapy is to support, reassure and gain the patient's confidence to maintain compliance with treatment (Sheppard and Davis 2000). To promote and ensure patient safety during oxygen administration, you should ensure that the correct procedure is followed according to local guidelines. The principles of drug administration are outlined in the recent document *Guidelines for the Administration of Medicines* (UKCC 2000), and all nurses should be familiar with these. In exercising professional accountability in respect of oxygen administration you should (UKCC 2000):

- Know the therapeutic uses of oxygen, the normal doses, side effects, precautions, contraindications and hazards.
- Be certain of the identity of the patient receiving the oxygen.
- Be aware of the patient's plan of care.
- Ensure that the prescription is unambiguous and written clearly.
- Have considered the method of oxygen delivery and timing of administration in the context of the condition of the patient and co-existing therapies.
- Contact the prescriber or another authorised prescriber without delay where contraindications to the prescribed oxygen are discovered, if the patient develops a reaction to it, or where patient assessment indicates that oxygen is no longer required.
- Make a clear, accurate and immediate record when the oxygen is administered, intentionally withheld or refused by the patient, ensuring that any written entries and the signature are clearly legible. It is the nurse's responsibility to ensure that a record is made if this task has been delegated.
- Countersign any entry when supervising a student nurse or midwife.

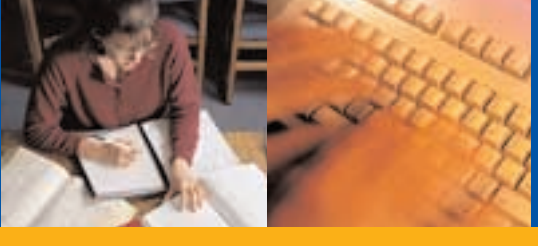
Dangers of oxygen therapy

Oxygen is combustible and care should be taken to avoid contact with naked flames or static electricity. It is important to remind patients that they should not smoke and no-smoking signs should be clearly visible. Respiratory depression can occur in some patients with COPD if high concentrations of oxygen are administered.

A reduction in the hypoxic drive to breathe can lead to life-threatening carbon dioxide retention and respiratory acidosis (Bateman and Leach 1998).

High inspired oxygen concentrations can lead to a fall in nitrogen levels in the lungs, resulting in a reduction in the production of surfactant (a substance that stabilises alveolar volume by reducing the surface tension), which can cause atelectasis. Inhalation of high oxygen concentrations for more than 48 hours can lead to pulmonary oxygen toxicity and damage the alveolar membrane; progression to adult respiratory distress syndrome (ARDS) is associated with high mortality (Bateman and Leach 1998).

High blood oxygen levels can lead to retrolental fibroplasia (neonatal retinopathy), but this condition is more common in premature babies.



Respiratory system and disorders

TIME OUT 5

Referring to the patient you have been considering, which method of oxygen delivery was used and why? How did you monitor the effectiveness of oxygen delivery and how well did the patient tolerate it? Describe how you could have improved the way oxygen was administered?

Nursing care

Breathless patients receiving oxygen therapy should be carefully and continually assessed and monitored as the condition can deteriorate rapidly, particularly at night. Where possible, they should be positioned in view of the nurse's station.

Before commencing a patient on oxygen therapy, it is important to explain the reasons for the therapy to the patient and his or her relatives and carers, and check their understanding. Patients should be given an opportunity to ask questions about their care. This will help to alleviate their anxiety and promote co-operation with therapy. Breathless patients should be nursed in a comfortable upright position with pillows used to provide additional support.

Following assessment, the patient's vital signs should be monitored and recorded as appropriate for their condition. You should also observe the patient for signs of cyanosis, increased use of accessory muscles and fatigue. Nursing documentation should be clearly charted and include the details of oxygen delivery: date and time the patient was commenced on oxygen therapy; the type of delivery device used; the oxygen flow rate; respiratory effort; breath sounds; skin colour; and any changes in the patient's mental state.

It is essential to check the patient regularly to ensure that he or she is receiving the prescribed dose of oxygen and that the delivery device is correctly and comfortably positioned. The effectiveness of oxygen delivery needs to be monitored regularly as the patient's requirements for oxygen might fluctuate as his or her condition changes.

Patients who have difficulty in breathing are often anxious and distressed and require information, support and reassurance. Ward staff should ensure that the call bell is easily accessible and that the patient is left to feel as comfortable as possible (Ashurst 1995). It is important to assess the effect of breathlessness and oxygen delivery on the patient's activities of daily living. Breathless patients often require assistance with self-care activities including mobilisation, dressing, eating and drinking. Because breathlessness restricts their ability to undertake many tasks at once, adopting a step-by-step approach is often a good way to meet patients' needs, while promoting independence and reducing episodes of breathlessness.

Patients receiving oxygen therapy should be encouraged to have frequent oral hygiene to counteract the drying effect of oxygen, particularly if they are unable to take oral fluids. If humidification is used, ensure that the water level does not fall below the manufacturer's recommended level. This can be topped up with sterile water as necessary. The humidification unit should be below the level of the patient's head and water should not collect in the tubing as this reduces the flow of oxygen to the patient. The temperature needs to be monitored because if it is too high it can severely burn the respiratory tract. Part of the nurse's role involves assisting other health professionals to undertake clinical investigations of breathless patients as required (Box 9).

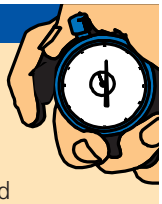
TIME OUT 6

Describe what measures you would take to promote patient safety during oxygen administration. Identify the main problems you think a breathless patient might encounter in terms of their physical, psychological and social needs and try to provide possible solutions to these, combining your clinical knowledge with the information obtained in this article.

Conclusion

Assessment of a breathless patient involves careful evaluation of the effectiveness of breathing, the work of breathing and the adequacy of ventilation. The patient's general appearance, medical history, presenting symptoms and the characteristics of his or her breathlessness are also important when assessing a breathless patient. Oxygen therapy can be a life-saving therapy, but it should be treated like any other drug. You should be familiar with the principles of oxygen delivery and be knowledgeable about the different delivery systems before managing the care of breathless patients

TIME OUT 7



Now that you have completed the article, you might like to think about writing a practice profile. Guidelines to help you write and submit a profile are outlined on page 56.

Box 9. Clinical investigations

- Sputum – appearance, microscopy, culture and sensitivity, cytology
- Radiology – chest X-ray, tomography
- Radioisotope scanning, for example, V/Q (ventilation/perfusion) scan
- Bronchoscopy
- Lung function tests
- Pulse oximetry
- Arterial blood gas analysis
- 12 lead electrocardiogram (ECG)
- Lung biopsy and pleural tap

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