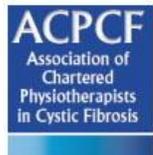




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Inspire

What is Inspire?

Inspire is a collation of existing NICE-accredited guidelines that are relevant to physiotherapists working within the cardio-respiratory setting. It is designed to help physiotherapists quickly see which guidelines are relevant to them.

How has Inspire been developed?

Inspire has been developed by Carley King, Professional Adviser at the CSP, with a steering group of expert members. Further detail on the the process of developing this resource can be found in the Process Overview document available on the Inspire web page.

How do I navigate through Inspire?

Inspire is designed to collate the relevant guidelines into one place, which naturally leads to a lot of information being pulled together. It should be easy to dip in and out of the sections of most interest to you. Case studies have been used to illustrate the guidelines, and further detail on specific aspects of guidance can be found by clicking the hyperlinks. It is recommended that you **click through this resource rather than scrolling**, for ease of navigation.

Why should I use the information in Inspire?

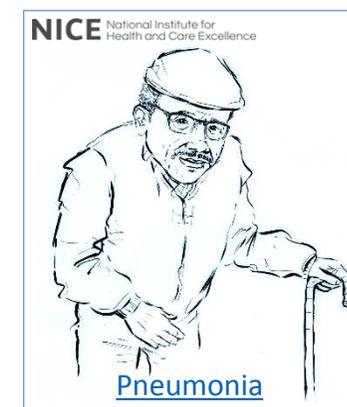
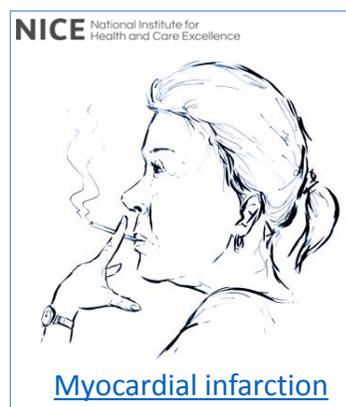
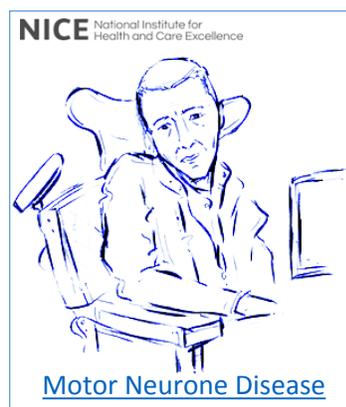
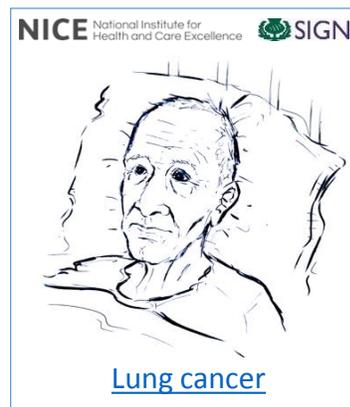
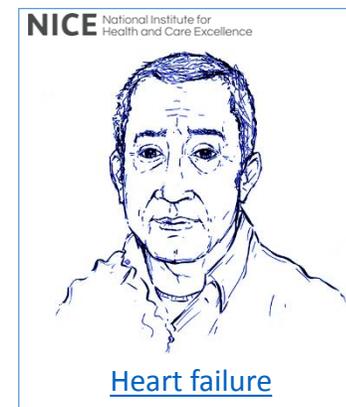
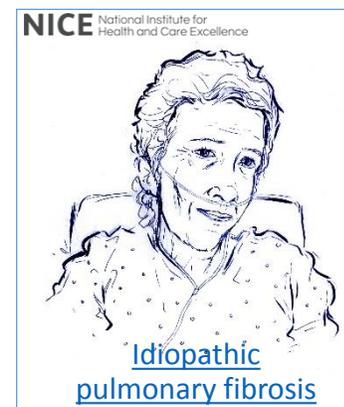
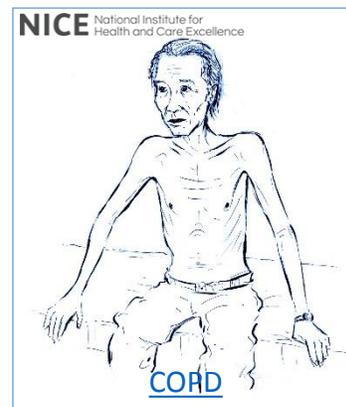
Inspire brings together evidence based guidance, with an ultimate aim to provide high quality, cost-effective care to patients. Whilst reading this resource, do bear in mind the ethos of guidelines and evidence based practice. They are guidelines, not tramlines, and should always be used alongside patient preferences and clinician experience.

[Glossary](#)

[References](#)

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Inspire navigation page 1/2: Conditions

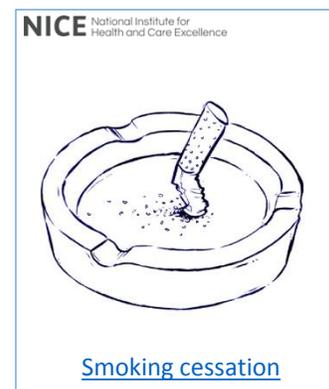
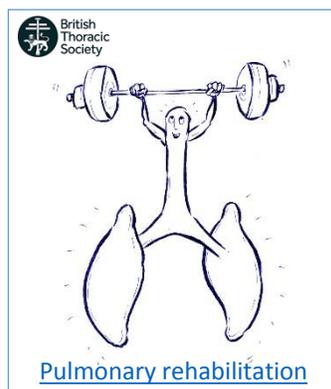
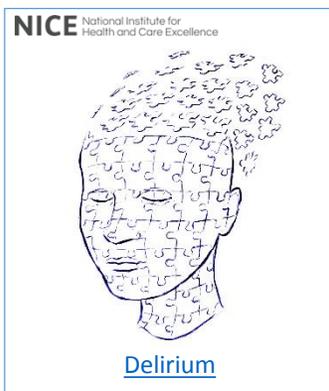
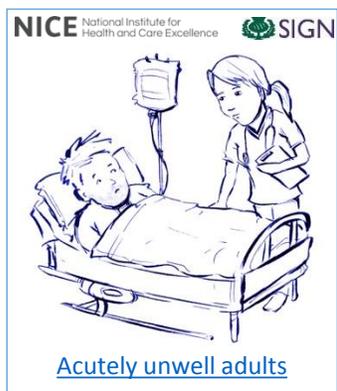


[Glossary](#)

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Inspire navigation page 2/2: Related guidance



[Glossary](#)

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Idiopathic pulmonary fibrosis (IPF) case study: Iris' story (69 years old)

I was diagnosed with idiopathic pulmonary fibrosis 4 years ago...it came as shock, I can tell you that. Although I guess I knew that having a cough like that for so long wasn't likely to be good news, I didn't realise it was one of the [symptoms of IPF](#). I had so many tests before they were actually able to diagnose me...the wait was excruciating.

It's all a bit of a blur, but shortly after diagnosis I remember being asked to walk for 6 minutes up and down a corridor (I think they called it the 6-minute walk test) and I had to fill out a questionnaire on how my breathlessness affected my day to day activities. They said the results from these tests suggested I might benefit from [Pulmonary Rehab](#) (PR) but it was all a bit too much to take on at the time so I said no. 6 months later when I had a follow up appointment, it was offered again and I jumped at the chance. I wanted to make the most of being able to do what I could, whilst I was still able.

The PR class was great. There were two parts to it- exercise and educational. And it was all tailored to the needs of people just like me with IPF. And because my knee gave me difficulties with some of the exercises, the physio made sure that they tailored each aspect to my needs. It was so easy to get to and really accessible - no stairs!

When I first started, I was so breathless with any movement. The physiotherapist noticed this, and asked if I would mind being assessed for [further investigations](#) to see how low my oxygen levels were getting and what the cause might be. The assessment was OK...I didn't need oxygen just yet and I was doing really well with the PR.

I do miss going to PR, but my condition has deteriorated, as I expected. I've now been started on [oxygen](#), which along with pacing myself, seems to have helped with some of the breathlessness I was experiencing. It is difficult sometimes but I try to stay positive, and make sure that I keep doing the things that I am able to. The team have been great in supporting me to keep what independence I can. Due to changes in my condition I have now been referred to the local palliative care services. At first I was a little anxious and didn't really know what to expect, but my family and I now have access to a full range of palliative services. It was such a relief when I was asked what I wanted from the [last few months of my life](#), and now I have an advanced care plan in place.

All of the healthcare professionals involved in my care are aware of my advanced care plan and know all about my preferences, making it seamless between seeing my team for my IPF and the team I see in the community.

I don't know where I'd be without the [support](#) I've had since the diagnosis.

Click here for information on the diagnosis of idiopathic pulmonary fibrosis <http://pathways.nice.org.uk/pathways/idiopathic-pulmonary-fibrosis>
Text based on: [NICE CG163 Idiopathic pulmonary fibrosis: The diagnosis and management of suspected idiopathic pulmonary fibrosis](#)



[Main
menu](#)

Symptoms of IPF

Be aware of IPF when assessing a patient with the following clinical features:

- age over 45 years
- persistent breathlessness on exertion
- persistent cough
- bilateral inspiratory crackles on auscultation
- clubbing of the fingers
- normal spirometry or impaired spirometry, usually with a restrictive pattern but sometimes with an obstructive pattern

Pulmonary Rehabilitation (PR) guidelines

Aim of PR: To improve exercise capacity, dyspnoea, health status and psychological wellbeing.

What should be included in PR?

Multicomponent and multidisciplinary interventions, tailored to the individual patient's needs

Combination of progressive muscle resistance and aerobic training to ensure strength and endurance benefits

Interval and continuous training

Generic exercise training with individualised intensity of the exercise

If expertise in NMES is available, selected patients (low BMI and quadriceps weakness) who are unable to participate could be considered for NMES

[Education](#)

Who should be offered PR?

All appropriate people with COPD, including those who have had a recent hospitalisation for an acute exacerbation, who consider themselves as functionally disabled (usually MRC 3 and above)

Patients with non-CF bronchiectasis who have breathlessness affecting their ADLs

Patients with IPF

How much patient commitment is required for PR?

All patients should be encouraged to continue to exercise upon completion of PR

Patients should attend a minimum of 12 supervised sessions

Who should not be offered PR?

Patients who are housebound with an MRC of 5 [should not routinely be offered PR within their own home](#)

Patients with asthma

Unstable angina or recent MI*

*Coexistent stable cardiovascular disease or AAA less than 5.5cm should not preclude referral or participation in moderate intensity aerobic exercise, provided blood pressure is controlled.

When should people attend PR?

For those admitted with an exacerbation of COPD, PR should be commenced within one month of discharge

PR programmes should be a minimum of twice weekly supervised sessions, for 6-12 weeks either as a rolling or cohort programme

Places should be available within a reasonable time of referral

Repeat PR should be considered for those who have completed a course more than 1 year previously.

Earlier repeat courses should be considered for those with accelerated physiological decline

Those who initially decline PR after an exacerbation should also be offered PR when they are stable

What components should not be used in PR?

Supplementary oxygen (unless patient is on long-term or ambulatory oxygen)

Heliox (unless there are comorbidities which require its administration)

IMT

Hormonal supplements

Nutritional supplements

Long-term domiciliary NIV (unless already established on it)

How can I measure the effectiveness of PR?

Exercise capacity

Dyspnoea

Health status

Uptake

Adherence

Completion rates

Where should PR classes be held?

Held at convenient times

Held in buildings that are accessible (location and entrance)

[Click to close](#)

Education topics for Pulmonary Rehabilitation

Suggested topics include:

- disease education (anatomy, physiology, pathology and pharmacology, including oxygen therapy & vaccination)
- dyspnoea/symptom management, including chest clearance techniques
- smoking cessation
- energy conservation/ pacing
- nutritional advice
- managing travel
- benefits system and disabled parking badges
- advance directives (living wills)
- making a change plan
- anxiety management
- goal setting and rewards
- relaxation
- identifying and changing beliefs about exercise and health related behaviours
- loving relationships/sexuality
- exacerbation management (including when to seek help, self-management and decision making, coping with setbacks and relapses)
- home care support
- managing surgery (non thoracic)
- the benefits of physical exercise
- support groups – such as the British Lung Foundation Breathe Easy groups, which operate throughout the UK

The package should take into account the different needs of patients at different stages of their disease.

Home based pulmonary rehabilitation programme

If a structured home based programme is offered, the following aspects should be considered:

- mechanisms to offer remote support
- home exercise equipment
- patient selection

When to refer for further assessment

If the person is breathless on exertion, consider assessment for:

- the causes of breathlessness and degree of hypoxia and
- ambulatory oxygen therapy and long-term oxygen therapy and/or
- pulmonary rehabilitation

If the person is breathless at rest, consider:

- assessment for the causes of breathlessness and degree of hypoxia and
- assessment for additional ambulatory oxygen therapy and long-term oxygen therapy and
- the person's psychosocial needs and offering referral to relevant services such as palliative care services and
- pharmacological symptom relief with benzodiazepines and/or opioids

Long term Oxygen Therapy (LTOT)

When should I refer somebody for LTOT assessment?

Patients with a resting stable SpO₂ ≤ 92% should be referred for ABGs to assess eligibility for LTOT

Wait at least 8 weeks after exacerbation for a formal assessment for LTOT

Written and verbal information should be given to patients referred to home oxygen assessment services at the time of referral

What is the guidance on AOT/SBOT?

AOT should not be routinely offered to patients who are ineligible for LTOT or who are already on LTOT

AOT assessment should only be offered to patients already on LTOT if they are mobile outdoors

Patients initiated on LTOT who are active outdoors should receive an AOT assessment to assess whether their flow rate needs increasing during exercise

AOT should only be offered to patients for use during exercise following a formal assessment demonstrating improvement in exercise endurance

SBOT delivering high flow oxygen therapy (12 L/min via a non-rebreather mask) should be offered to treat acute attacks of cluster headache

What are the patient safety considerations?

Discuss smoking cessation

For patients who continue to smoke, discuss potential for limited clinical benefit

Provide written education prior to ordering home oxygen and at each subsequent review if the patient continues to smoke

Warn patients and family members who smoke in the presence of home oxygen of the dangers of smoking in the presence of oxygen

Patients should be made aware in writing of the dangers of using home oxygen within the vicinity of any naked flame

How should patients be followed up?

Patients commenced on LTOT post hospital discharge should be advised it may be removed if reassessment shows clinical improvement

LTOT patients should receive follow-up at 3 months after LTOT has been ordered, including assessment of ABGs and flow rate

LTOT patients should then receive follow-up visits at 6– 12 months (either home based or in combination with hospital visits)

Follow-up visits should be conducted by a specialist home oxygen assessment team with the necessary skills to deliver patient education and manage withdrawal of home oxygen

How can the oxygen be delivered?

Oxygen concentrators should be used to deliver LTOT at flow rates of 4 L/min or less, for at least 15 hours a day

Portable oxygen should be delivered by whatever mode is best suited to the individual in order to increase the daily amount of oxygen used and activity levels in mobile patients

Nasal cannulae should be considered as the first choice of delivery device. Some patients may benefit from, or prefer, a Venturi mask

Oxygen-conserving devices can be used in patients requiring high flow rates to increase the time the cylinder will last

Humidification of home oxygen should only be ordered for tracheostomy patients

Less able patients should be offered wheeled devices or backpacks if assessment shows they improve ambulation and quality of life

What oxygen flow rate should be used?

Start on a flow rate of 1 L/min, titrating up by 1 L/min until SpO₂ >90% and PaO₂ ≥8 kPa at rest

Non-hypercapnic patients should increase flow rate by 1 L/min during sleep in the absence of any contraindications

End of life care

Discussions around end of life care should be documented, in particular:

- the patient's specific concerns
- the patient's understanding of their illness and its prognosis
- the patient's values or personal goals for care
- patient preferences for the types of care or treatment that may be beneficial in the future and their availability

It is important to share information between healthcare professionals about:

- any problems the patient has
- the management plan
- what the patient has been told
- what the patient has understood (where possible)
- the involvement of other agencies
- any advance decision made by the patient

Text based on:

[NICE CG121 Lung Cancer: the diagnosis and treatment of lung cancer](#)
[SIGN 137: Management of lung cancer](#)

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Support

Best supportive care should be tailored to disease severity, rate of progression, and the person's preference, and should include if appropriate:

- information and support e.g. accurate and clear information (verbal and written) to people with idiopathic pulmonary fibrosis, and their families and carers with the person's consent. This should include information about investigations, diagnosis, management and [smoking cessation advice](#) if appropriate
- symptom relief
- management of comorbidities
- withdrawal of therapies suspected to be ineffective or causing harm
- [end of life care](#)

Smoking cessation

Smoking cessation in secondary care

- During the first face-to-face contact, ask everyone if they smoke or have recently stopped smoking. Record smoking status and the date they stopped, if applicable, in the person's records. If a person is unable to or does not want to talk about smoking, note this in their records and ask about their smoking status at the first available opportunity.
- Advise everyone who smokes that secondary care settings are smoke free, and they must therefore abstain from smoking while admitted to or using secondary care services.
- Encourage everyone who smokes to stop smoking completely. Explain that help is available.
- Offer and, if the person agrees, arrange for them to receive intensive behavioural support, either during their current outpatient visit or during their inpatient stay.
- For people using secondary care services in a community setting, staff who are trained to provide intensive behavioural support should offer and provide support. Other staff should offer and, if accepted, arrange a referral to a local stop smoking service.
- If a person declines help to stop smoking, leave the offer open. At subsequent contacts, offer the support again.
- Ensure all actions, discussions and decisions related to stop smoking advice, referrals or interventions are recorded in the person's records (preferably computer-based).

Tobacco: harm reduction approaches to smoking

- Harm reduction may be useful for people who:
 - may not be able (or do not want) to stop smoking in one step
 - may want to stop smoking, without necessarily giving up nicotine
 - may not be ready to stop smoking, but want to reduce the amount they smoke
- If someone does not want, is not ready or is unable to stop smoking in one step, ask if they would like to consider a harm-reduction approach and refer onwards as necessary

Smokeless tobacco cessation: South Asian communities

- Ask people if they use smokeless tobacco, using the names that the various products are known by locally. If necessary, show them a picture of what the products look like, using visual aids. (This may be necessary if the person does not speak English well or does not understand the terms being used.) Record the outcome in the patient notes
- If someone uses smokeless tobacco, ensure they are aware of the health risks (for example, the risk of cardiovascular disease, oropharyngeal cancers and periodontal disease)
- Use a brief intervention to advise them to stop
- In addition to delivering a brief intervention, refer people who want to quit to local specialist tobacco cessation services
- Record the response to any attempts to encourage or help them to stop using smokeless tobacco in the patient notes (as well as recording whether they smoke)

Text based on:

[NICE PH48 Smoking cessation in secondary care: acute, maternity and mental health services](#)

[NICE PH45 Tobacco: harm-reduction approaches to smoking](#)

[NICE PH39 Smokeless tobacco cessation: South Asian communities](#)

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- any advance decision made by the patient

Text based on:

[NICE CG121 Lung Cancer: the diagnosis and treatment of lung cancer](#)
[SIGN 137: Management of lung cancer](#)

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Asthma case study: Annie's story (5 years old). Diary written by Annie's mum.

October 10th

Annie had another check up with the clinic today for her [asthma](#). They checked her inhaler technique, which is fine now she's using a spacer as well. And they're really pleased with how she's getting on with her [personalised asthma action plan](#). This, along with the asthma self-management education programme Annie gets in school, have really helped us to keep her asthma under control. It's so nice to see her playing outside with her friends, she's really not letting the asthma stop her!

November 15th

It's been such a nightmare week. Annie rushed in from the garden the other day, so breathless she was barely able to speak. It was the most frightening moment of my life. We called an ambulance, and they rushed her to hospital saying they suspected she was having an [acute severe asthma](#) attack. Thank goodness she got the treatment she needed and she was much better the next day. But this has left us all really shaken, I'm scared it will happen again. We thought we were doing so well, and this really came out of the blue.

A physiotherapist came around to see Annie on the ward once she was feeling better. He taught her some breathing exercises, which I think she's now got the hang of with a bit of help from me! The physio explained that these can help improve quality of life and reduce symptoms, when used alongside her medications. I asked if there was anything else that we could be doing to help with Annie's asthma and that one of my worries has been that my smoking could be making things worse. The physio gave me some information about the effects of smoking on both mine and Annie's health, and offered to refer me for support to [stop smoking](#). Needless to say, I jumped at the chance! I feel like this is the push I needed to finally get me to quit.

November 20th

Annie was discharged home yesterday- what a relief! She saw the physiotherapist again before discharge, and we all reviewed her personalised asthma action plan. One other thing that was raised is Annie's [weight](#)...I had no idea how much of an impact it could have on her asthma. With a bit of support, hopefully we'll get this under control.

Annie now has more regular appointments for review as an outpatient, where we'll be able to discuss her long-term asthma treatment plan, and generally keep a close eye as she has been identified as at [risk of near fatal or fatal asthma](#). When I first heard them say this, I was absolutely petrified of her doing anything in case it triggers another attack, but at least now we've got the support that we need to keep Annie well.

Asthma diagnosis in children

Clinical features that increase the probability of asthma:

- more than one of the following symptoms: wheeze, cough, difficulty breathing, chest tightness, particularly if these symptoms:
 - are frequent and recurrent
 - are worse at night and in the early morning
 - occur in response to, or are worse after, exercise or other triggers, such as exposure to pets, cold or damp air, or with emotions or laughter
 - occur apart from colds
- personal history of atopic disorder
- family history of atopic disorder and/or asthma
- widespread wheeze heard on auscultation
- history of improvement in symptoms or lung function in response to adequate therapy

Clinical features that decrease the probability of asthma:

- symptoms with colds only, with no interval symptoms
- isolated cough in the absence of wheeze or difficulty breathing
- history of moist cough
- prominent dizziness, light-headedness, peripheral tingling
- repeatedly normal physical examination of chest when symptomatic
- normal PEF or spirometry when symptomatic
- no response to a trial of asthma therapy
- clinical features pointing to an [alternative diagnosis](#)

Clinical features suggesting an alternative diagnosis

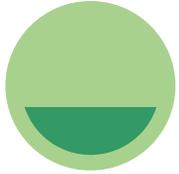
Perinatal and Family History	Possible diagnosis
Symptoms present from birth or perinatal lung problem	Cystic fibrosis; chronic lung disease of prematurity; ciliary dyskinesia; developmental lung anomaly
Family history of unusual chest disease	Cystic fibrosis; neuromuscular disorder
Severe upper respiratory tract disease	Defect of host defence; ciliary dyskinesia
Symptoms and Signs	
Persistent moist cough	Cystic fibrosis; bronchiectasis; protracted bacterial bronchitis; recurrent aspiration; host defence disorder; ciliary dyskinesia
Excessive vomiting	Gastro-oesophageal reflux (\pm aspiration)
Dysphagia	Swallowing problems (\pm aspiration)
Breathlessness with light headedness and peripheral tingling	Hyperventilation/panic attacks
Inspiratory stridor	Tracheal or laryngeal disorder
Abnormal voice or cry	Laryngeal problem
Focal signs in chest	Developmental anomaly; post-infective syndrome; bronchiectasis; tuberculosis
Finger clubbing	Cystic fibrosis; bronchiectasis
Failure to thrive	Cystic fibrosis; host defence disorder; gastro-oesophageal reflux
Investigations	
Focal or persistent radiological changes	Developmental lung anomaly; cystic fibrosis; post-infective disorder; recurrent aspiration; inhaled foreign body; bronchiectasis; tuberculosis

Personalised asthma action plan

The plan should include:

- specific advice about recognising loss of asthma control, assessed by symptoms or peak flows or both
 - in children, symptom-based written plans are effective in reducing emergency consultations for asthma, although (in older children) peak flow-based plans may be as effective for other outcomes
- actions, summarised as two or three action points, to take if asthma deteriorates, including seeking emergency help, starting oral steroids (which may include provision of an emergency course of steroid tablets), restarting or temporarily increasing (as opposed to just doubling) inhaled corticosteroids, as appropriate to clinical severity

Levels of severity of acute asthma attacks in children



Moderate asthma

Able to talk in sentences

SpO₂ ≥92%

PEF ≥50% best or predicted

Heart rate:

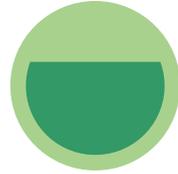
≤140/min in children aged 2–5 years

≤125/min in children >5 years

Respiratory rate:

≤40/min in children aged 2–5 years

≤30/min in children >5 years



Acute severe asthma

Can't complete sentences in one breath or too breathless to talk or feed

SpO₂ <92%

Respiratory rate:

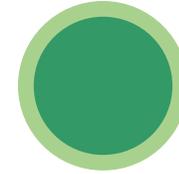
>40/min in children aged 2–5 years

>30/min in children aged >5 years

Heart rate:

>140/min in children aged 2–5 years

>125/min in children aged >5 years



Life threatening asthma

Clinical signs

Silent chest

Cyanosis

Poor respiratory effort

Hypotension

Exhaustion

Confusion

Measurements

SpO₂ <92%

PEF <33% best or predicted

Smoking cessation

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Smokeless tobacco cessation: South Asian communities

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Text based on:

[NICE PH48 Smoking cessation in secondary care: acute, maternity and mental health services](#)

[NICE PH45 Tobacco: harm-reduction approaches to smoking](#)

[NICE PH39 Smokeless tobacco cessation: South Asian communities](#)

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Obesity in children and young people

Clinical judgement should be used to when to measure a patient's height and weight. Consultations for a particular condition offer the ideal opportunity to measure somebody's BMI.

How is BMI measured in children and young people?

BMI (adjusted for age and gender: <http://www.rcpch.ac.uk/child-health/research-projects/uk-who-growth-charts/uk-growth-chart-resources-2-18-years/school-age>) should be used as a practical estimate of adiposity in children and young people. However, it should be interpreted with caution because it is not a direct measure of adiposity.

When should I refer for onwards treatment?

Refer children with a BMI at or above the 91st centile to a weight management service for a full assessment and tailored intervention.

What other treatment can I offer?

- encourage children and young people to increase their level of physical activity, even if they do not lose weight as a result, because of the other health benefits exercise can bring (for example, reduced risk of type 2 diabetes and cardiovascular disease)
- encourage children to do at least 60 minutes of moderate or greater intensity physical activity each day. The activity can be in 1 session or several sessions lasting 10 minutes or more
- be aware that children who are already overweight may need to do more than 60 minutes' activity
- encourage children to reduce inactive behaviours, such as sitting and watching television, using a computer or playing video games
- give children the opportunity and support to do more exercise in their daily lives (for example, walking, cycling, using the stairs and active play). Make the choice of activity with the child, and ensure it is appropriate to the child's ability and confidence
- give children the opportunity and support to do more regular, structured physical activity (for example football, swimming or dancing). Make the choice of activity with the child, and ensure it is appropriate to the child's ability and confidence

Text based on:

NICE CG189 [Obesity: identification, assessment and management of overweight and obesity in children, young people and adults](#)

NICE PH47 [Managing overweight and obesity among children and young people: lifestyle weight management services](#)

SIGN 115 [Management of obesity](#)

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Risk of fatal or near fatal asthma

A combination of severe asthma recognised by one or more of:

- previous near-fatal asthma, e.g. previous ventilation or respiratory acidosis
- requiring 3 or more classes of asthma medication
- heavy use of β 2 agonist
- repeated attendances at A&E for asthma care especially if in the last year
- previous admission for asthma, especially in the last year

AND adverse behavioural or psychosocial features recognised by one or more of:

non-adherence with treatment or monitoring	failure to attend appointments
fewer GP contacts	frequent home visits
self discharge from hospital	psychosis, depression, other psychiatric illness or deliberate self harm
current or recent major tranquilliser use	denial
alcohol or drug abuse	obesity
learning difficulties	severe domestic, marital or legal stress
employment problems	childhood abuse
income problems	social isolation

Asthma case study (adults): Annie, 22 years old

March 1st

Seriously, asthma is the bane of my life. I'm in and out of hospital like a yoyo, it's terrible. And if I'm not in hospital, I'm having a [check up](#) at the clinic. It feels relentless. At least when I was at school, I could go to the clinic based there. It was a bit of a pain, but at least it gave me a chance to chat with other kids in my school who had asthma. It made me feel slightly less abnormal, knowing that it wasn't just me. The [asthma attacks](#) are so frightening and now they are saying that I've got difficult asthma...I think I've known that since I was about 5!

Now I'm being seen by a dedicated multidisciplinary service, especially for people like me with difficult asthma. I was referred to see a physiotherapist again, and they assessed me for dysfunctional breathing, to see if this was contributing to my symptoms. Turns out it is, so I have a few exercises to be working on.

They also checked my [BMI and waist circumference](#) as part of the assessment. Apparently, it's 34, which is way higher than it should be, but they raised it in such a respectful way, I didn't feel like I was being judged at all. They gave me some information on the [health benefits](#) associated with weight loss and I told them that I've tried it all before, with no luck. But they told me about a [weight management programme](#) which sounds really good- I've been referred and hopefully I'll get somewhere with it!

Fingers crossed all of these things will keep me out of hospital a little longer!

Text based on:

[SIGN 141 British guideline on the management of asthma](#)

[SIGN 115 Obesity](#)

[NICE CG189 Obesity: identification, assessment and management of overweight and obesity in children, young people and adults](#)

[NICE PH53 Managing overweight and obesity in adults – lifestyle weight management services](#)

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Asthma check ups

Adults with asthma should continue to be monitored with regular check ups whereby the following is recorded:

- symptomatic asthma control
- lung function, assessed by spirometry or by PEF
- asthma attacks, oral corticosteroid use, and time off work since last assessment
- inhaler technique
- adherence
- bronchodilator reliance
- possession of and use of a self management plan/ personal action plan

Levels of severity of acute asthma attacks in adults



Moderate asthma

Increasing symptoms
PEF > 50-75% best or predicted
No features of acute severe asthma



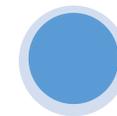
Acute severe asthma

Any one of:
PEF 33-50% best or predicted
Respiratory rate ≥ 25 /min
Heart rate ≥ 110 /min
Inability to complete sentences in one breath



Life threatening asthma

Any one of the following in a patient with severe asthma:
Clinical signs
Altered conscious level
Exhaustion
Arrhythmia
Hypotension
Cyanosis
Silent chest
Poor respiratory effort
Measurements
PEF <33 best or predicted
SpO₂ <92%
PaO₂ <8kPa
'normal' PaCO₂ (4.6-6.0kPa)



Near fatal asthma

Raised PaCO₂ and/or requiring mechanical ventilation with raised inflation pressures

Overweight and obesity in adults: identification, assessment, and intervention

Use clinical judgement to decide when to measure a person's height and weight. Opportunities include registration with a general practice, consultation for related conditions (such as type 2 diabetes and cardiovascular disease) and other routine health checks. Go through the steps below to work out the level of intervention to offer somebody who is overweight.

BMI: Classification of overweight and obesity in adults

- use BMI as a practical estimate of adiposity in adults. Interpret BMI with caution because it is not a direct measure of adiposity
- think about using waist circumference, in addition to BMI, in people with a BMI less than 35 kg/m²
- do not use bioimpedance as a substitute for BMI as a measure of general adiposity

Classification	BMI (kg/m ²)
Healthy weight	18.5-24.9
Overweight	25-29.9
Obesity I	30-34.9
Obesity II	35-39.9
Obesity III	40 or more



Assessment of the health risks associated with being overweight or obese in adults

Give adults information about their classification of clinical obesity and the impact this has on risk factors for developing other long-term health problems.

BMI classification	Waist circumference		
	Low	High	Very High
Overweight	No increased risk	Increased risk	High risk
Obesity I	Increased risk	High risk	Very high risk

For men, waist circumference of <94 cm is low, 94–102 cm is high and >102 cm is very high.
For women, waist circumference of <80 cm is low, 80–88 cm is high and >88 cm is very high.

Level of intervention

Base the level of intervention to discuss with the patient initially as follows:

BMI classification	Waist circumference			Number of comorbidities
	Low	High	Very high	
Overweight	1	2	2	3
Obesity I	2	2	2	3
Obesity II	3	3	3	4
Obesity III	4	4	4	4

Key

- 1= general advice on healthy weight and lifestyle (can be provided regardless of specialty)
- 2=diet and physical activity (refer to specialist service or relevant profession)
- 3=diet and physical activity, consider drugs (refer to specialist service)
- 4=diet and physical activity, consider drugs, consider surgery (refer to specialist service)

Health benefits of weight loss

Healthcare professionals should discuss the health benefits associated with sustained modest weight loss:

- improved lipid profiles
- reduced osteoarthritis-related disability
- lowered all cause cancer and diabetes mortality in some patient groups
- reduced blood pressure
- improved glycaemic control
- reduction in risk of type 2 diabetes
- potential for improved lung function in patients with asthma

Text based on:

[SIGN 115 Obesity](#)

[NICE CG189 Obesity: identification, assessment and management of overweight and obesity in children, young people and adults](#)

[NICE PH53 Managing overweight and obesity in adults – lifestyle weight management services](#)

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Weight management programmes

Individuals asking about weight management should be encouraged to be physically active and reduce sedentary behaviour, including television watching.

Healthcare professionals should discuss willingness to change with patients and then target weight loss interventions according to patient willingness around each component of behaviour required for weight loss, e.g. specific dietary and/or activity changes.

Overweight and obese individuals should be prescribed a volume of physical activity equal to approximately 1,800-2,500 kcal/week. This corresponds to approximately 225-300 min/week of moderate intensity physical activity (which may be achieved through five sessions of 45-60 minutes per week, or lesser amounts of vigorous physical activity).

Weight management programmes should include physical activity, dietary change and behavioural components. Healthcare professionals should be aware of the following options:

- the local obesity pathway and the local strategic approach to preventing and managing obesity
- the range of local lifestyle weight management services available
- national sources of accurate information and advice, such as NHS Choices and Change4life
- continuing professional development or training opportunities on weight management

Text based on:

[SIGN 115 Obesity](#)

[NICE CG189 Obesity: identification, assessment and management of overweight and obesity in children, young people and adults](#)

[NICE PH53 Managing overweight and obesity in adults – lifestyle weight management services](#)

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COPD Case study: Charlie's story part 1 (67 years old)

I had a cough for absolutely ages before I went to my GP about it...and only then after the wife had been badgering on about it for months! I can't say I was surprised when the doctor said I had a problem with my lungs, but I just never thought anything serious would actually happen to me. The doctor said at the time that she thought I might have something called [COPD, given my symptoms](#). I didn't really understand what that meant - this felt like asthma to me, not being able to get your breath.

I was sent off for a load of tests and am now looked after by a [specialist team](#). After the tests, they gave me a lot of information about what was going on. I still felt confused about why they were saying it wasn't asthma, but they went through it with me a few times and now I understand more [what COPD is, and how it is different to asthma](#). One of the big shockers was when they said I had a [57% chance of still being here in four years time](#)- 57%?! I've got more life left in me yet...I'll just have to prove them wrong!

During one of my check ups, I told the doctor that one of my main problems is getting rid of this nasty phlegm that keeps getting stuck in my throat- honestly, it makes you feel like you're choking, it's terrible. After this, a physiotherapist came to see me. We had a really long chat about what I was able to do now, and what I wanted to be able to do. We made a whole list of problems that I had mentioned, and decided on how we would tackle them. I even agreed to try quitting smoking!

Problem	Treatment
Decreased exercise tolerance	Refer to pulmonary rehab
Difficulty with sputum clearance	ACBT +/- PEP
Current smoke (smoking history 25 pack years)	Refer to smoking cessation
Difficulty using inhaler	Assessment of inhaler technique
Breathlessness affecting ADLs	Refer to pulmonary rehab Refer to OT Provide information on welfare benefits
Lack of knowledge of condition	Education (potentially as part of pulmonary rehab programme)

For further information on the diagnosis of COPD, visit: <http://pathways.nice.org.uk/pathways/chronic-obstructive-pulmonary-disease#path=view%3A/pathways/chronic-obstructive-pulmonary-disease/diagnosing-copd.xml&content=view-index>

Text based on: [NICE CG101 Chronic obstructive pulmonary disease: Management of chronic obstructive pulmonary disease in adults in primary and secondary care \(partial update\)](#)

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Symptoms indicating COPD

A diagnosis of COPD should be considered in patients over the age of 35 who have a risk factor (generally smoking) and who present with one or more of the following symptoms:

- exertional breathlessness
- chronic cough
- regular sputum production
- frequent winter 'bronchitis'
- wheeze

Multidisciplinary team management

COPD care should be delivered by a multidisciplinary team.

The following functions should be considered when defining the activity of the multidisciplinary team:

- assessing patients (including performing spirometry, assessing the need for oxygen, the need for aids for daily living and the appropriateness of delivery systems for inhaled therapy)
- care and treatment of patients (including non-invasive ventilation, pulmonary rehabilitation, hospital-at-home/early discharge schemes, providing palliative care, identifying and managing anxiety and depression, advising patients on relaxation techniques, dietary issues, exercise, social security benefits and travel)
- advising patients on self-management strategies
- identifying and monitoring patients at high risk of exacerbations and undertaking activities which aim to avoid emergency admissions
- advising patients on exercise
- education of patients and other health professionals

Clinical features differentiating between COPD and asthma

Clinical feature	COPD	Asthma
Smoke or ex-smoker	Nearly all	Possibly
Symptoms under age of 35	Rare	Often
Chronic productive cough	Common	Uncommon
Breathlessness	Persistent and progressive	Variable
Night time waking with breathlessness and/or wheeze	Uncommon	Common
Significant diurnal or day-to-day variability of symptoms	Uncommon	Common

Assessing severity and prognosis of COPD

No single measure can be used to assess the severity of COPD. However, a comprehensive assessment of severity is important as it has implications for therapy and relates to prognosis. You can follow the process below to work out somebody's prognosis.

1. Prognostic factors

A comprehensive assessment of severity includes the degree of airflow obstruction, disability, the frequency of exacerbations and the following known prognostic factors:

- FEV₁
- T_LCO
- breathlessness (using [MRC scale](#))
- health status
- exercise capacity (e.g. 6-minute walk test)
- BMI
- PaO₂
- cor pulmonale

3. BODE index

With the above information, you can calculate the BODE index (BMI, airflow obstruction, dyspnoea and exercise capacity) to assess prognosis.

Variable	Points on BODE index			
	1	2	3	4
FEV ₁	≥65	50-64	36-49	≤35
6-minute walk test	≥350	250-349	150-249	≤149
MRC score	1-2	3	4	5
BMI	>21	≤21		



2. Degree of airflow obstruction

FEV ₁ /FVC (post bronchodilator)	FEV ₁ % predicted	Severity of airflow obstruction
<0.7	≤80%	Stage 1- Mild
<0.7	50-79%	Stage 2- Moderate
<0.7	30-49%	Stage 3- Severe
<0.7	<30%	Stage 4- Very severe*

*Or FEV₁ < 50% with respiratory failure

Approximate 4 year survival interpretation	
0-2 points	80%
3-4 points	67%
5-6 points	57%
7-10 points	18%

MRC Dyspnoea Scale

Grade	Degree of breathlessness
1	Not troubled by breathlessness except on strenuous exercise
2	Short of breath when hurrying or walking up a slight hill
3	Walks slower than contemporaries on ground level because of breathlessness, or has to stop for breath when walking at own pace
4	Stops for breath after walking about 100 metres or after a few minutes on level ground
5	Too breathless to leave the house, or breathless when dressing or undressing

Pulmonary Rehabilitation (PR) guidelines

Aim of PR: To improve exercise capacity, dyspnoea, health status and psychological wellbeing.

What should be included in PR?

Should be multicomponent, multidisciplinary interventions, tailored to the individual patient's needs

Combination of progressive muscle resistance and aerobic training to ensure strength and endurance benefits

Interval and continuous training are safe and effective

Generic exercise training with individualised intensity of the exercise is recommended

If expertise in NMES is available, selected patients (low BMI and quadriceps weakness) who are unable to participate could be considered for NMES.

[Education](#)

Who should be offered PR?

All appropriate people with COPD, including those who have had a recent hospitalisation for an acute exacerbation, who consider themselves as functionally disabled (usually MRC 3 and above)
Patients with non-CF bronchiectasis who have breathlessness affecting their ADLs

How much patient commitment is required for PR?

All patients should be encouraged to continue to exercise beyond the programme upon completion of PR.
Patients should attend a minimum of 12 supervised sessions.

Who should not be offered PR?

Patients with an MRC of 5 and are housebound, and [should not routinely be offered PR within their own home](#)

Patients with asthma

Unstable angina or recent MI*

*Coexistent stable cardiovascular disease or AAA less than 5.5cm should not preclude referral or participation in moderate intensity aerobic exercise, provided blood pressure is controlled.

When should people attend PR?

PR should be commenced within one month of discharge, for those admitted with an exacerbation of COPD

PR programmes should be a minimum of twice weekly supervised sessions, for 6-12 weeks either as a rolling or cohort programme

Places should be available within a reasonable time of referral

Repeat PR should be considered for those who have completed a course more than 1 year previously.

Earlier repeat courses should be considered for those with accelerated physiological decline

Those who initially decline should be offered elective PR.

Components that should not be used:

Supplementary oxygen (unless patient is on long-term or ambulatory oxygen)

Heliox (unless there are comorbidities which require its administration)

IMT

Hormonal supplements

Nutritional supplements

Long-term domiciliary NIV (unless already established on it)

How can I measure the effectiveness of PR?

Exercise capacity

Dyspnoea

Health status

Uptake

Adherence

Completion rates

Where should PR classes be held?

Held at convenient times

Held in buildings that are accessible (location and entrance)

Education topics for Pulmonary Rehabilitation

Suggested topics include:

- disease education (anatomy, physiology, pathology and pharmacology, including oxygen therapy & vaccination)
- dyspnoea/symptom management, including chest clearance techniques
- smoking cessation
- energy conservation/ pacing
- nutritional advice
- managing travel
- benefits system and disabled parking badges
- advance directives (living wills)
- making a change plan
- anxiety management
- goal setting and rewards
- relaxation
- identifying and changing beliefs about exercise and health related behaviours
- loving relationships/sexuality
- exacerbation management (including when to seek help, self-management and decision making, coping with setbacks and relapses)
- home care support
- managing surgery (non thoracic)
- the benefits of physical exercise
- support groups – such as the British Lung Foundation Breathe Easy groups, which operate throughout the UK

The package should take into account the different needs of patients at different stages of their disease.

Home based pulmonary rehabilitation programme

If a structured home based programme is offered, the following aspects should be considered:

- mechanisms to offer remote support
- home exercise equipment
- patient selection

Smoking history in pack years

Number of cigarettes smoked per day, divided by 20, multiplied by the number of years smoked

e.g. $10 \div 20 \times 50 = 25$

Smoking cessation

Smoking cessation in secondary care

- During the first face-to-face contact, ask everyone if they smoke or have recently stopped smoking. Record smoking status and the date they stopped, if applicable, in the person's records. If a person is unable to or does not want to talk about smoking, note this in their records and ask about their smoking status at the first available opportunity.
- Advise everyone who smokes that secondary care settings are smoke free, and they must therefore abstain from smoking while admitted to or using secondary care services.
- Encourage everyone who smokes to stop smoking completely. Explain that help is available.
- Offer and, if the person agrees, arrange for them to receive intensive behavioural support, either during their current outpatient visit or during their inpatient stay.
- For people using secondary care services in a community setting, staff who are trained to provide intensive behavioural support should offer and provide support. Other staff should offer and, if accepted, arrange a referral to a local stop smoking service.
- If a person declines help to stop smoking, leave the offer open. At subsequent contacts, offer the support again.
- Ensure all actions, discussions and decisions related to stop smoking advice, referrals or interventions are recorded in the person's records (preferably computer-based).

Tobacco: harm reduction approaches to smoking

- Harm reduction may be useful for people who:
 - may not be able (or do not want) to stop smoking in one step
 - may want to stop smoking, without necessarily giving up nicotine
 - may not be ready to stop smoking, but want to reduce the amount they smoke
- If someone does not want, is not ready or is unable to stop smoking in one step, ask if they would like to consider a harm-reduction approach and refer onwards as necessary.

Smokeless tobacco cessation: South Asian communities

- Ask people if they use smokeless tobacco, using the names that the various products are known by locally. If necessary, show them a picture of what the products look like, using visual aids. (This may be necessary if the person does not speak English well or does not understand the terms being used.) Record the outcome in the patient notes.
- If someone uses smokeless tobacco, ensure they are aware of the health risks (for example, the risk of cardiovascular disease, oropharyngeal cancers and periodontal disease). Use a brief intervention to advise them to stop.
- In addition to delivering a brief intervention, refer people who want to quit to local specialist tobacco cessation services.
- Record the response to any attempts to encourage or help them to stop using smokeless tobacco in the patient notes (as well as recording whether they smoke).

Text based on:

[NICE PH48 Smoking cessation in secondary care: acute, maternity and mental health services](#)

[NICE PH45 Tobacco: harm-reduction approaches to smoking](#)

[NICE PH39 Smokeless tobacco cessation: South Asian communities](#)

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Inhaler technique

Inhalers should only be prescribed after patients have received training in the use of the device and have demonstrated a satisfactory technique.

If the patient is unable to use their inhaler device satisfactorily, an alternative should be found. If the inhaler is compatible, a spacer device can be used (see below).

Patients should have their ability to use an inhaler device regularly assessed by a competent healthcare professional and, if necessary, re-taught the correct technique.

Use of spacer devices

The spacer should be compatible with the patient's metered-dose inhaler. It is recommended that spacers are used in the following way:

- the drug is administered by repeated single actuations of the metered-dose inhaler into the space, with each followed by inhalation
- there should be minimal delay between inhaler actuation and inhalation
- tidal breathing can be used as it is as effective as single breaths

Spacers should be cleaned no more than monthly as more frequent cleaning affects their performance. They should be cleaned with water and washing-up liquid and allowed to air dry. The mouthpiece should be wiped clean of detergent before use.

Education topics

Suggested topics include:

- disease education (anatomy, physiology, pathology and pharmacology, including oxygen therapy & vaccination)
- dyspnoea/symptom management, including chest clearance techniques
- smoking cessation
- energy conservation/ pacing
- nutritional advice
- managing travel
- benefits system and disabled parking badges
- advance directives (living wills)
- making a change plan
- anxiety management
- goal setting and rewards
- relaxation
- identifying and changing beliefs about exercise and health related behaviours
- loving relationships/sexuality
- exacerbation management (including when to seek help, self-management and decision making, coping with setbacks and relapses)
- home care support
- managing surgery (non thoracic)
- the benefits of physical exercise
- support groups – such as the British Lung Foundation Breathe Easy groups, which operate throughout the UK

The package should take into account the different needs of patients at different stages of their disease.

COPD case study continued (acute exacerbation from community to hospital)

Two years after I was diagnosed with COPD, I was generally finding things more and more difficult. I'd had two [exacerbations](#) which I managed to recover from at home with the help from the team, but the most recent exacerbation really knocked it out of me. To be honest, I haven't really been feeling myself since.

The last time my breathing got worse, I contacted my physiotherapist and they came round to assess me. They checked my oxygen levels using the finger probe, but said it was pretty limited as they didn't have any information on the levels of carbon dioxide in my blood. They phoned the consultant, explaining that I wasn't really coping at home and was more or less confined to my chair due to my breathlessness, and we all decided that [going to hospital was the best option](#). I was given an oxygen alert card after my last exacerbation, which I always keep handy in case I become unwell, to help ensure I'm not given [too much oxygen](#).

They started me on [nebulisers](#), as my usual inhalers weren't enough. I was seen by the physiotherapist in the hospital, and we tried PEP but it was so tiring. The rest is a bit of a blur, but my wife says that despite everything we were trying, I continued to become [really unwell](#). So, they tried starting me on NIV. Luckily, I'd already heard quite a bit about NIV during my pulmonary rehab sessions, so it wasn't as scary as it could have been. Everybody looking after me knew exactly what to do, and my wife tells me that it was clearly discussed that I would [still be for transfer to the intensive care unit](#) and support for my breathing if needed.

Needless to say, I don't remember any of this but I did end up going to the intensive care unit to go on the breathing machine. Apparently I was asleep for a whole week with the machine doing my breathing for me. I had to use the NIV again to help with my breathing at first, but everybody was quite pleased with my [recovery](#).

Once I started to get a bit better, [the physios and the therapy support workers came to see me to help get me moving again](#). I never thought that sitting on the edge of the bed could be such hard work! Now that part I do remember!

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Definition of an exacerbation

An exacerbation is a sustained worsening of the patient's symptoms from their usual stable state which is beyond normal day-to-day variations, and is acute in onset. Commonly reported symptoms are worsening breathlessness, cough, increased sputum production and change in sputum colour.

Factors to consider when deciding where to treat the patient

Factor	Treat at home	Treat in hospital
Able to cope at home	Yes	No
Breathlessness	Mild	Severe
General condition	Good	Poor/ deteriorating
Level of activity	Good	Poor/ confined to bed
Cyanosis	No	Yes
Worsening peripheral oedema	No	Yes
Level of consciousness	Normal	Impaired
Already receiving LTOT	No	Yes
Social circumstances	Good	Living alone/ not coping
Acute confusion	No	Yes
Rapid rate of onset	No	Yes
Significant comorbidity	No	Yes
SaO ₂ <90%	No	Yes
Changes on chest radiograph	No	Present
Arterial pH level	≥7.35	<7.35
Arterial PaO ₂	≥7 kPa	<7 kPa

Text based on: [NICE CG101 Chronic obstructive pulmonary disease: Management of chronic obstructive pulmonary disease in adults in primary and secondary care \(partial update\)](#)

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Emergency oxygen

What should you do with patients with COPD (and other at risk conditions) who have had an episode of hypercapnic respiratory failure?

Give an oxygen alert card and a 24% or 28% Venturi mask

Instruct the patient to show the card to ambulance crew and emergency department staff in the event of an exacerbation

What do you do if you suspect hypercapnia or respiratory acidosis due to excessive oxygen therapy?

Step down oxygen therapy rather than discontinue completely

Use 28% or 35% oxygen from Venturi mask depending on SpO₂ and ABG results

What delivery devices should be available in hospitals where oxygen is administered?

High concentration reservoir (non-rebreathe) mask for high-concentration oxygen delivery

Nasal cannulae or simple face mask for medium-concentration therapy

24% and 28% Venturi mask for patients with definite or likely COPD or other conditions predisposing to hypercapnic respiratory failure

Tracheostomy mask for patients with a tracheostomy

Venturi masks can be substituted for nasal cannulae at low flow rates (1-2 l/min) once patient has stabilised

What about oxygen delivery for patients with prior hypercapnic respiratory failure who do NOT have an oxygen alert card?

28% Venturi mask at 4l/min at pre-hospital care
either 24% or 28% Venturi mask at 2-4l/min in hospital care
Initial target SpO₂ 88-92% pending ABG results

What are the target SpO₂ for acutely ill patients?

94-98% for those not at risk of hypercapnic respiratory failure

88-92% for patients with risk factors for hypercapnic respiratory failure

Treatment of patients with recurrent hypercapnic respiratory failure should be based on ABG estimations from previous acute exacerbations, as hypercapnic respiratory failure can occur even if SpO₂<88%

Some patients (particularly >70 years old or if obese) may have SpO₂<94% and do NOT require oxygen therapy when clinically stable

Non-hypoxaemic breathless patients do NOT benefit from oxygen therapy (except in carbon monoxide poisoning and some other rare instances), but a reduction of >3% in SpO₂ within target range may be first evidence of acute illness and should prompt further assessment

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Nebulisers

Patients with distressing or disabling breathlessness despite maximal therapy using inhalers should be considered for nebuliser therapy.

Nebulisers should be used alongside the patient's usual hand-held inhaler to administer inhaled therapy, with an aim of changing back to using just a hand-held inhaler as soon as their condition stabilises.

For non-hypercapnic patients, the nebuliser should be driven by piped oxygen or an oxygen cylinder at a flow rate of >6l/min

If the patient is hypercapnic, the nebuliser should be driven by compressed air rather than oxygen to avoid worsening hypercapnia (with the oxygen required administered via nasal cannulae at the same time to keep SpO₂ within the target range). If compressed air is not available, limit nebulisation to 6 minutes for patients at risk of hypercapnia.

Nebulised therapy should not continue to be prescribed without assessing and confirming that one or more of the following occurs:

- a reduction in symptoms
- an increase in the ability to undertake activities of daily living
- an increase in exercise capacity
- an improvement in lung function

Nebulised therapy should not be prescribed without an assessment of the patient's and/or carer's ability to use it.

Patients should be offered a choice between a facemask and a mouthpiece to administer their nebulised therapy, unless the drug specifically requires a mouthpiece (for example, anticholinergic drugs).

If nebuliser therapy is prescribed, the patient should be provided with equipment, servicing, advice and support.

Text based on:

[NICE CG101 Chronic obstructive pulmonary disease: Management of chronic obstructive pulmonary disease in adults in primary and secondary care \(partial update\)](#)
[Royal College of Physicians, Emergency oxygen use in adult patients: Concise guidance to good practice series](#)

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The acutely unwell patient

Which physiological observations should be taken at initial assessment and during routine monitoring?

heart rate
respiratory rate
systolic blood pressure
level of consciousness
oxygen saturation (plus percentage/ flow rate of oxygen)
temperature
state of hydration

Additional monitoring to consider:

- hourly urine output
- biochemical analysis, e.g. lactate, blood glucose, base deficit, arterial pH
- pain assessment

What should track and trigger systems consist of?

Should use multiple criteria (based on the physiological observations) or weighted scoring systems, which allow a graded response. These scoring systems should:

- define the parameters to be measured and the frequency of observations
- include a clear and explicit statement of the parameters, cut-off points or scores that should trigger a response
- have thresholds that are set locally and reviewed regularly to optimise sensitivity and specificity

What should happen in a clinical emergency?

Patients identified as a 'clinical emergency' should bypass the graded response system. With the exception of those with a cardiac arrest, they should be treated in the same way as the high-score group. For patients in the high- and medium-score groups, healthcare professionals should:

- initiate appropriate interventions
- assess response
- formulate a management plan, including location and level of care



Low score

Increased frequency of observations and the nurse in charge alerted.



Medium score

Urgent call to team with primary medical responsibility for the patient. Simultaneous call to personnel with core competencies for acute illness e.g. a critical care outreach team, a hospital-at-night team or a specialist trainee in an acute medical or surgical speciality.



High score

Emergency call to team with critical care competencies and diagnostic skills. The team should include a medical practitioner skilled in the assessment of the critically ill patient, who possesses advanced airway management and resuscitation skills. There should be an immediate response.

What about patients with limited reversibility?

Patients identified as deteriorating with limited reversibility should have a written management plan which considers and includes:

- key issues
- anticipated outcomes which acknowledge uncertainty
- resuscitation status
- discussions with the multidisciplinary team
- discussion with the patient and family, which may include discussion of uncertain recovery and medical plan, preferred place of care and concerns or wishes
- standardised and agreed ceilings of care

What are the suggested staff competencies?

Staff caring for patients in acute hospital settings should have competencies in monitoring, measurement, interpretation and prompt response to the acutely ill patient appropriate to the level of care they are providing. Education and training should be provided to ensure staff have these competencies, and they should be assessed to ensure they can demonstrate them.

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Escalating care

Making a decision whether to intubate and ventilate should be based on:

- functional status
- BMI
- requirement for oxygen when stable
- comorbidities
- previous intensive care unit admissions
- age
- FEV₁

Monitoring recovery post extubation

Consider using NIV post extubation for patients who are slow to wean from invasive ventilation.

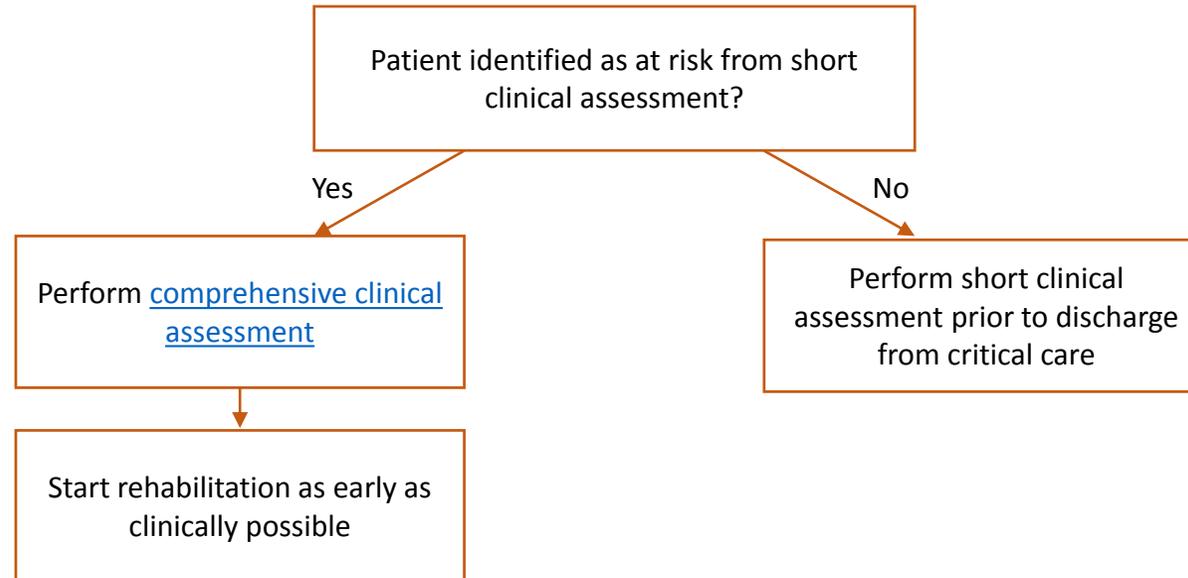
Monitor recovery by:

- Clinical assessment of symptoms and functional capacity
- Pulse oximetry
- Intermittent ABGs
- Not daily PEF or FEV₁, as the magnitude of changes is small compared with the variability of the measurement

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Rehabilitation after critical illness: Critical care

During the patient's critical care stay and as early as clinically possible, perform a [short clinical assessment to determine the patient's risk](#) of developing [physical and non-physical morbidity](#).



Rehabilitation should be based on the comprehensive clinical assessment and the rehabilitation goals. Rehabilitation should include:

- measures to prevent avoidable physical and non-physical morbidity
- an individualised, structured rehabilitation programme with frequent follow-up reviews

Give patients (and their family/carer unless the patient disagrees) the following information during their critical care stay:

- Information about the patient's critical illness, interventions and treatments
- Information about the equipment used during the patient's critical care stay
- Information about any possible short-term and/or long-term physical and non-physical problems which may require rehabilitation

Deliver all the above information more than once during the patient's critical care stay.

Examples from the short clinical assessment that may indicate the patient is at risk of developing physical and non-physical morbidity

Physical	Non-physical
Unable to get out of bed independently	Recurrent nightmares, particularly where patients report trying to stay awake to avoid nightmares
Anticipated long duration of critical care stay	Intrusive memories of traumatic events which have occurred prior to admission (e.g. road traffic accidents) or during their critical care stay (e.g. delusion experiences or flashbacks)
Obvious significant physical or neurological injury	New and recurrent anxiety or panic attacks
Lack of cognitive functioning to continue exercise independently	Expressing the wish not to talk about their illness or changing the subject quickly off the topic
Unable to self ventilate on 35% of oxygen or less	
Presence of pre-morbid respiratory or mobility problems	
Unable to mobilise independently over short distances	

Symptoms from the functional assessment that may indicate the presence of physical and non-physical morbidity

Physical dimensions	
Physical problems	Weakness; inability/partial ability to sit, rise to standing, or to walk; fatigue; pain; breathlessness; swallowing difficulties; incontinence; inability/partial ability to self-care
Sensory problems	Changes in vision or hearing; pain; altered sensation
Communication problems	Difficulties in speaking or using language to communicate; difficulties in writing
Social care or equipment needs	Mobility aids; transport; housing; benefits; employment and leisure needs

Non-physical dimensions	
Anxiety, depression and PTS-related symptoms	New or recurrent somatic symptoms including palpitations, irritability and sweating; symptoms of derealisation and depersonalisation; avoidance behaviour; depressive symptoms including tearfulness and withdrawal; nightmares, delusions, hallucinations and flashbacks
Behavioural and cognitive problems	Loss of memory; attention deficits; sequencing problems; deficits in organisational skills; confusion, apathy, disinhibition, compromised insight
Other psychological or psychosocial problems	Low self-esteem; poor or low self-image and/or body image issues; relationship difficulties, including those with family/carers

Comprehensive clinical assessment

The comprehensive clinical assessment should:

- include assessments by healthcare professionals experienced in critical care and rehabilitation
- physical, sensory and communication problems
- underlying factors, such as pre-existing psychological or psychiatric distress
- symptoms that have developed during the critical care stay, such as delusions, intrusive memories, anxiety, panic episodes, nightmares, flashback episodes or depression
- be used to agree short-term and medium-term rehabilitation goals
- inform the individualised, structured rehabilitation programme (with the patient's family/carer involved unless the patient disagrees)

The comprehensive clinical assessment, the rehabilitation goals, and the rehabilitation programme should be collated and documented in the patient's clinical records.

COPD Case study continued (hospital to home)

Luckily I didn't have to spend too long on the intensive care unit and I was [discharged from critical care](#) to the respiratory ward. It was hard work but I [carried on with my rehab](#), using my rehabilitation manual to help me do exercises when the physiotherapists weren't there. The therapy support worker was great at popping in too and doing my exercises with me. Within two weeks, I was up and about walking again and could go home.

Admittedly, I felt a little nervous about going home in case my breathing got worse again. I was used to always having somebody around, and was worried that it might all be a bit too much for my wife. The physiotherapist and OT checked how I was managing with day to day things on the ward and referred me to social services for an assessment. They also thought I could do with some help at first, which made me feel much better about going home.

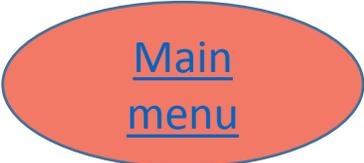
The whole transition was so seamless...my usual physiotherapist came to see me and knew all about what had happened in hospital as the hospital physio had already been in touch with her- it was just what I needed during such a turbulent time. The physio talked me through any [specialist referrals](#) I might need in the future. We had a long chat about palliative care, and I said that I would like to be referred to their services. Even if I don't really need it yet, I like to get to know people as it is definitely getting nearer. I've been feeling quite down about things recently...well, over the past year if I'm being honest. The physio picked up on this and offered to refer me to [speak with somebody about my mood](#).

After 8 weeks of being at home, my oxygen levels still hadn't picked up, so I was started on [oxygen at home](#). I'm on oxygen all the time now, and have [NIV overnight](#). The palliative care team have offered so much support and information for me and my wife- I'm trying out the local hospice for a weeks respite tomorrow.

Text based on:

[NICE CG101 Chronic obstructive pulmonary disease: Management of chronic obstructive pulmonary disease in adults in primary and secondary care \(partial update\)](#)

[NICE CG83 Rehabilitation after critical illness](#)



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Discharge from critical care

The critical care area transferring team and the receiving ward team should take shared responsibility for the care of the patient being transferred. They should jointly ensure:

- there is continuity of care through a formal structured handover of care from critical care area staff to ward staff (including the structured rehabilitation programme), supported by a written plan
- that the receiving ward, with support from critical care if required, can deliver the agreed plan

The formal structured handover of care should include:

- a summary of critical care stay, including diagnosis and treatment
- a monitoring and investigation plan
- a plan for ongoing treatment and any agreed limitations of treatment
- physical and rehabilitation needs
- psychological and emotional needs
- specific communication or language needs

Give patients the following information before, or as soon as possible after, their discharge from critical care:

- information about the rehabilitation care pathway
- information about the differences between critical care and ward-based care. This should include information about the differences in the environment, and staffing and monitoring levels
- information about the transfer of clinical responsibility to a different medical team

Also give the information to their family and/or carer, unless the patient disagrees.

If applicable:

- emphasise the information about possible short-term and/or long-term physical and non-physical problems that may require rehabilitation
- provide information about sleeping problems, nightmares and hallucinations and the readjustment to ward-based care

Text based on [NICE CG83 Rehabilitation after critical illness](#)

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Continuing rehabilitation on the ward and discharge home

Based on clinical judgement and the individual patient's rehabilitation needs, consider offering a structured and supported self-directed rehabilitation manual for at least 6 weeks after discharge from critical care, as part of the individualised, structured rehabilitation programme.

Before discharging patients to the home or community who were receiving the individualised structured rehabilitation programme during ward-based care:

- perform a functional assessment which should include [physical and non-physical dimensions](#)
- assess the impact of the outcomes from the functional assessment on the patient's activities of daily living and participation
- review, update and agree the rehabilitation goals with the patient, involving the family and/or carer if the patient agrees

If continuing rehabilitation needs are identified from the functional assessment, ensure that before the patient is discharged:

- discharge arrangements, including appropriate referrals for the necessary ongoing care, are in place before completing the discharge
- all discharge documents are completed and forwarded to the appropriate post-discharge services and the patient
- the patient, and/or the family and/or carer as appropriate, is aware of the discharge arrangements and understands them

Give patients the following information before their discharge to home or community care:

- information about their physical recovery, based on the goals set during ward-based care if applicable
- information about how to manage activities of daily living including self-care and re-engaging with everyday life
- if applicable, information about driving, returning to work, housing and benefits
- information about local statutory and non-statutory support services, such as support groups
- general guidance, especially for the family and/or carer, on what to expect and how to support the patient at home. This should take into account both the patient's needs and the family's/carer's needs
- give the patient their own copy of the critical care discharge summary

Also give the information to their family and/or carer, if the patient agrees.

Symptoms from the functional assessment that may indicate the presence of physical and non-physical morbidity

Physical dimensions	
Physical problems	Weakness; inability/partial ability to sit, rise to standing, or to walk; fatigue; pain; breathlessness; swallowing difficulties; incontinence; inability/partial ability to self-care
Sensory problems	Changes in vision or hearing; pain; altered sensation
Communication problems	Difficulties in speaking or using language to communicate; difficulties in writing
Social care or equipment needs	Mobility aids; transport; housing; benefits; employment and leisure needs

Non-physical dimensions	
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Behavioural and cognitive problems	Loss of memory; attention deficits; sequencing problems; deficits in organisational skills; confusion; apathy; disinhibition; compromised insight
Other psychological or psychosocial problems	Low self-esteem; poor or low self-image and/or body image issues; relationship difficulties, including those with family/carers

2-3 months post discharge from critical care

All patients with rehabilitation needs should be reviewed 2–3 months after their discharge from critical care.

They should have a functional reassessment of their health and social care needs. If appropriate, also enquire about sexual dysfunction.

The functional reassessment should be face to face in the community or in hospital, performed by an appropriately-skilled healthcare professional(s) who is familiar with the patient's critical care problems and rehabilitation care pathway.

Based on the functional reassessment, refer the patient to the appropriate rehabilitation or specialist services if:

- the patient appears to be recovering at a slower rate than anticipated, according to their rehabilitation goals
- the patient has developed unanticipated physical and/or non-physical morbidity that was not previously identified

Give support if the patient is not recovering as quickly as they anticipated.

Referral for specialist advice

Referral may be appropriate at all stages of COPD and not solely in the most severely disabled patients.

Patients who are referred do not always have to be seen by a respiratory physician, but can be seen by members of the COPD team who have appropriate training and expertise. Reasons for referral include:

Reason	Purpose
Assessment for oxygen therapy	Optimise therapy and measure blood gases
Assessment for long-term nebuliser therapy	Optimise therapy and exclude inappropriate prescriptions
Assessment for pulmonary rehabilitation	Identify candidates for pulmonary rehabilitation
Dysfunctional breathing	Confirm diagnosis, optimise pharmacotherapy and access other therapists
Symptoms disproportionate to lung function deficit	Look for other explanations including cardiac impairment, pulmonary hypertension, depression and hyperventilation

Depression

Healthcare professionals should be alert to the presence of depression in patients with a chronic physical health problem. The presence of anxiety and depression should be considered in patients:

- who are hypoxic
- who have severe dyspnoea
- who have been seen at or admitted to a hospital with an exacerbation of COPD

Consider asking patients who may have depression two questions, specifically:

- during the last month, have you often been bothered by feeling down, depressed or hopeless?
- during the last month, have you often been bothered by having little interest or pleasure in doing things?

If a patient with a chronic physical health problem answers 'yes' to either of the depression identification questions but the practitioner is not competent to perform a mental health assessment, they should refer the patient to an appropriate professional. The patient's GP should be informed of the referral.

Physical activity programmes for patients with persistent sub-threshold depressive symptoms or mild to moderate depression and a chronic physical health problem, and for patients with sub-threshold depressive symptoms that complicate the care of the chronic physical health problem, should:

- be modified (in terms of the duration of the programme and frequency and length of the sessions) for different levels of physical ability as a result of the particular chronic physical health problem, in liaison with the team providing care for the physical health problem
- be delivered in groups with support from a competent practitioner
- consist typically of 2-3 sessions per week of moderate duration (45 minutes to 1 hour) over 10 to 14 weeks (average 12 weeks)
- be coordinated or integrated with any rehabilitation programme for the chronic physical health problem

Text based on:

[NICE CG91 Depression in adults with a chronic physical health problem: Treatment and management](#)

[SIGN 114 Non-pharmaceutical management of depression in adults](#)

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LTOT for COPD

When should you assess the need for LTOT?

All patients with very severe airflow obstruction ($FEV_1 < 30\%$ predicted)

Patients with cyanosis

Patients with polycythaemia

Patients with peripheral oedema

Patients with a raised jugular venous pressure

Patients with oxygen saturations $\leq 92\%$ breathing room air

Consider for patients with severe airflow obstruction (FEV_1 30–49% predicted)

When should you refer for LTOT?

Stable COPD and resting $PaO_2 \leq 7.3$ kPa

Stable COPD and resting $PaO_2 \leq 8$ kPa with peripheral oedema, polycythaemia (haematocrit $\geq 55\%$) or pulmonary hypertension

Resting hypercapnia and fulfilment of above criteria

What is not recommended in COPD?

Nocturnal oxygen therapy is not recommended in patients with COPD who have nocturnal hypoxaemia but who fail to meet the criteria for LTOT

SBOT should not be ordered for use prior to or following exercise in hypoxaemic or normoxic patients with COPD

SBOT should not be ordered on discharge from hospital for non-hypoxaemic patients with severe COPD

How should oxygen be delivered?

Small light-weight cylinders, oxygen-conserving devices and portable liquid oxygen systems should be available for the treatment of patients with COPD

A choice about the nature of equipment prescribed should take account of the hours of ambulatory oxygen use required by the patient and the oxygen flow rate required

What are the different types of oxygen therapy?

SBOT should only be considered for episodes of severe breathlessness in patients with COPD not relieved by other treatments

SBOT should only continue to be prescribed if an improvement in breathlessness following therapy has been documented

When indicated, SBOT should be provided from cylinders

AOT should be considered in patients who have exercise desaturation, are shown to have an improvement in exercise capacity and/or dyspnoea with oxygen, and have the motivation to use oxygen

AOT should only be prescribed after an appropriate assessment has been performed by a specialist. The purpose of the assessment is to assess the extent of desaturation, and the improvement in exercise capacity with supplemental oxygen, and the oxygen flow rate required to correct desaturation

For further information on LTOT, [click here](#)

Text based on: [NICE CG101 Chronic obstructive pulmonary disease: Management of chronic obstructive pulmonary disease in adults in primary and secondary care \(partial update\)](#)

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Long term Oxygen Therapy (LTOT)

When should I refer somebody for LTOT assessment?

Patients with a resting stable SpO₂ ≤ 92% should be referred for ABGs to assess eligibility for LTOT

Wait at least 8 weeks after exacerbation for a formal assessment for LTOT

Written and verbal information should be given to patients referred to home oxygen assessment services at the time of referral

What is the guidance on AOT/SBOT?

AOT should not be routinely offered to patients who are ineligible for LTOT or who are already on LTOT

AOT assessment should only be offered to patients already on LTOT if they are mobile outdoors

Patients initiated on LTOT who are active outdoors should receive an AOT assessment to assess whether their flow rate needs increasing during exercise

AOT should only be offered to patients for use during exercise following a formal assessment demonstrating improvement in exercise endurance

SBOT delivering high flow oxygen therapy (12 L/min via a non-rebreather mask) should be offered to treat acute attacks of cluster headache

What are the patient safety considerations?

Discuss smoking cessation

For patients who continue to smoke, discuss potential for limited clinical benefit

Provide written education prior to ordering home oxygen and at each subsequent review if the patient continues to smoke

Warn patients and family members who smoke in the presence of home oxygen of the dangers of smoking in the presence of oxygen

Patients should be made aware in writing of the dangers of using home oxygen within the vicinity of any naked flame

How should patients be followed up?

Patients commenced on LTOT post hospital discharge should be advised it may be removed if reassessment shows clinical improvement

LTOT patients should receive follow-up at 3 months after LTOT has been ordered, including assessment of ABGs and flow rate

LTOT patients should then receive follow-up visits at 6– 12 months (either home based or in combination with hospital visits)

Follow-up visits should be conducted by a specialist home oxygen assessment team with the necessary skills to deliver patient education and manage withdrawal of home oxygen

How can the oxygen be delivered?

Oxygen concentrators should be used to deliver LTOT at flow rates of 4 L/min or less, for at least 15 hours a day

Portable oxygen should be delivered by whatever mode is best suited to the individual in order to increase the daily amount of oxygen used and activity levels in mobile patients

Nasal cannulae should be considered as the first choice of delivery device. Some patients may benefit from, or prefer, a Venturi mask

Oxygen-conserving devices can be used in patients requiring high flow rates to increase the time the cylinder will last

Humidification of home oxygen should only be ordered for tracheostomy patients

Less able patients should be offered wheeled devices or backpacks if assessment shows they improve ambulation and quality of life

What oxygen flow rate should be used?

Start on a flow rate of 1 L/min, titrating up by 1 L/min until SpO₂ >90% and PaO₂ ≥8 kPa at rest

Non-hypercapnic patients should increase flow rate by 1 L/min during sleep in the absence of any contraindications

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Long-term NIV

Adequately treated patients with chronic hypercapnic respiratory failure who have required assisted ventilation (whether invasive or non-invasive) during an exacerbation or who are hypercapnic or acidotic on LTOT should be referred to a specialist centre for consideration of long-term NIV.

Myocardial infarction (MI) Magda's story 46 years old

I couldn't believe it when they told me I'd had a heart attack. I have always been [overweight](#), and know [I shouldn't smoke](#)...but I still didn't think that this would happen to me. My job has always kept me active, and I thought this would be enough. I've never been so scared in my life. When I was first told about [Cardiac Rehabilitation](#) I thought "No way...I can't do that!" But the staff were so reassuring and I started cardiac rehab whilst I was still in the hospital.

I was supposed to turn up to the cardiac rehab classes after discharge, but it just seemed a bit much once I was home to be doing that, as well as adjusting to being at home again. And I was feeling stressed about [being off work](#) if I'm honest. A few days later, I received a phone call from the physiotherapist running the classes and after a long chat about my fears around attending, I agreed to give it a try. I'd already received a lot of information whilst I was still in hospital, but the classes gave me chance to get further [information and advice](#) so I knew what I should and shouldn't do after my heart attack. The amount of information they were able to give me was fantastic, and really helped me think through my activity levels, and who I might have to contact about various things you take for granted, like driving.

They also gave me lots of [clear advice on exercising](#), so I felt quite confident about staying active after the cardiac rehab class had ended. Now I'm the most active I've been for a long time, but it did take a while to get over that fear. Knowing the [health benefits of weight loss](#) has helped motivate me to stay on track. Although I don't think I could have done it alone...joining the [weight management programme](#) was a life-saver!

Overweight and obesity in adults: identification, assessment, and intervention

Use clinical judgement to decide when to measure a person's height and weight. Opportunities include registration with a general practice, consultation for related conditions (such as type 2 diabetes and cardiovascular disease) and other routine health checks. Use the information below to help decide on the level of intervention.

Classification of overweight and obesity in adults

- Use BMI as a practical estimate of adiposity in adults Interpret BMI with caution because it is not a direct measure of adiposity
- Think about using waist circumference, in addition to BMI, in people with a BMI less than 35 kg/m²
- Do not use bioimpedance as a substitute for BMI as a measure of general adiposity

Classification	BMI (kg/m ²)
Healthy weight	18.5-24.9
Overweight	25-29.9
Obesity I	30-34.9
Obesity II	35-39.9
Obesity III	40 or more

Level of intervention

Base the level of intervention to discuss with the patient initially as follows:

BMI classification	Waist circumference			Number of comorbidities
	Low	High	Very high	
Overweight	1	2	2	3
Obesity I	2	2	2	3
Obesity II	3	3	3	4
Obesity III	4	4	4	4

Assessment of the health risks associated with being overweight or obese in adults

Give adults information about their classification of clinical obesity and the impact this has on risk factors for developing other long term health problems

BMI classification	Waist circumference		
	Low	High	Very high
Overweight	No increased risk	Increased risk	High risk
Obesity I	Increased risk	High risk	Very high risk

For men, waist circumference of <94cm is low, 94-102cm is high and >120cm is very high
For women, waist circumference of <80cm is low, 80-88cm is high and >88cm is very high

Key

- 1= general advice on healthy weight and lifestyle (can be provided regardless of speciality)
- 2=diet and physical activity (refer to specialist service or relevant profession)
- 3=diet and physical activity, consider drugs (refer to specialist service)
- 4=diet and physical activity, consider drugs, consider surgery (refer to specialist service)

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Smoking cessation

Smoking cessation in secondary care

- During the first face-to-face contact, ask everyone if they smoke or have recently stopped smoking. Record smoking status and the date they stopped, if applicable, in the person's records. If a person is unable to or does not want to talk about smoking, note this in their records and ask about their smoking status at the first available opportunity.
- Advise everyone who smokes that secondary care settings are smoke free, and they must therefore abstain from smoking while admitted to or using secondary care services.
- Encourage everyone who smokes to stop smoking completely. Explain that help is available.
- Offer and, if the person agrees, arrange for them to receive intensive behavioural support, either during their current outpatient visit or during their inpatient stay.
- For people using secondary care services in a community setting, staff who are trained to provide intensive behavioural support should offer and provide support. Other staff should offer and, if accepted, arrange a referral to a local stop smoking service.
- If a person declines help to stop smoking, leave the offer open. At subsequent contacts, offer the support again.
- Ensure all actions, discussions and decisions related to stop smoking advice, referrals or interventions are recorded in the person's records (preferably computer-based).

Tobacco: harm reduction approaches to smoking

- Harm reduction may be useful for people who:
 - may not be able (or do not want) to stop smoking in one step
 - may want to stop smoking, without necessarily giving up nicotine
 - may not be ready to stop smoking, but want to reduce the amount they smoke
- If someone does not want, is not ready or is unable to stop smoking in one step, ask if they would like to consider a harm-reduction approach and refer onwards as necessary.

Smokeless tobacco cessation: South Asian communities

- Ask people if they use smokeless tobacco, using the names that the various products are known by locally. If necessary, show them a picture of what the products look like, using visual aids. (This may be necessary if the person does not speak English well or does not understand the terms being used.) Record the outcome in the patient notes.
- If someone uses smokeless tobacco, ensure they are aware of the health risks (for example, the risk of cardiovascular disease, oropharyngeal cancers and periodontal disease). Use a brief intervention to advise them to stop.
- In addition to delivering a brief intervention, refer people who want to quit to local specialist tobacco cessation services.
- Record the response to any attempts to encourage or help them to stop using smokeless tobacco in the patient notes (as well as recording whether they smoke).

Text based on:

[NICE PH48 Smoking cessation in secondary care: acute, maternity and mental health services](#)

[NICE PH45 Tobacco: harm-reduction approaches to smoking](#)

[NICE PH39 Smokeless tobacco cessation: South Asian communities](#)

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Cardiac rehabilitation

Who should attend?

All patients (regardless of their age) should be advised about and offered a cardiac rehabilitation programme with an exercise component

Patients should not be excluded from the entire programme if they choose not to attend certain components

If a patient has cardiac or other clinical conditions that may worsen during exercise, these should be treated if possible before the patient is offered the exercise component of cardiac rehabilitation. For some patients, the exercise component may be adapted by an appropriately qualified healthcare professional

Patients with left ventricular dysfunction who are stable can safely be offered the exercise component of cardiac rehabilitation

How should cardiac rehab programmes be conducted?

Take into account the patient's physical and psychological status, as well as the type of activity planned when offering advice about the timing of returning to normal activities

An estimate of the physical demand of a particular activity, and a comparison between activities, can be made using tables of metabolic equivalents (METS) of different activities (further information can be found on the [Centers for Disease Control and Prevention website](#))

Advise patients on how to use a perceived exertion scale to help monitor physiological demand
Patients who have had a complicated MI may need expert advice

Advice on competitive sport may need expert assessment of function and risk, and is dependent on what sport is being discussed and the level of competitiveness

A home-based programme validated for patients who have had an MI (such as [The Heart Manual](#)), can be offered

How to encourage people to attend?

Deliver cardiac rehabilitation in a non-judgemental, respectful and culturally sensitive manner. Consider employing bilingual peer educators or cardiac rehabilitation assistants

Discuss with the person any factors that might stop them attending a cardiac rehabilitation programme, such as transport difficulties

Offer cardiac rehabilitation programmes in a choice of venues (e.g. home, hospital and community) and at a choice of times of day, for example, sessions outside of working hours

Provide a range of different types of exercise, to meet the needs of people of all ages, or those with significant comorbidity

Offer single-sex cardiac rehabilitation programme classes if there is sufficient demand

Ensure that there are clear lines of responsibility for arranging the early initiation of cardiac rehabilitation

Encourage all staff, including senior medical staff, involved in providing care for people after an MI, to actively promote cardiac rehabilitation

Begin cardiac rehabilitation as soon as possible after admission and before discharge from hospital

Invite the person to a cardiac rehabilitation session which should start within 10 days of their discharge from hospital

Contact people who do not start or do not continue to attend the cardiac rehabilitation programme with a further reminder, such as:

- a motivational letter
- a prearranged visit from a member of the cardiac rehabilitation team
- a telephone call
- a combination of the above

Seek feedback from cardiac rehabilitation programme users and aim to use this feedback to increase the number of people starting and attending the programme

Make cardiac rehabilitation equally accessible and relevant to all people after an MI, particularly people from groups that are less likely to access this service

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Wider health and social care needs

Be aware of the wider health and social care needs of a person who has had an MI. Offer information and sources of help on:

- economic issues
- welfare rights
- housing and social support issues

Additional information to provide for people post MI

Health education and information needs:

- take into account the physical and psychological status of the patient, the nature of their work and their work environment when giving advice on returning to work
- be up to date with the latest Driver and Vehicle Licensing Agency (DVLA) guidelines. Regular updates are published on the DVLA website
- after an MI without complications, people who wish to travel by air should seek advice from the Civil Aviation Authority. People who have had a complicated MI need expert individual advice
- people who have had an MI who hold a pilot's licence should seek advice from the Civil Aviation Authority

Psychological and social support:

- offer stress management in the context of comprehensive cardiac rehabilitation
- do not routinely offer complex psychological interventions such as cognitive behavioural therapy
- involve partners or carers in the cardiac rehabilitation programme if the patient wishes

Sexual activity:

- reassure patients that after recovery from an MI, sexual activity presents no greater risk of triggering a subsequent MI than if they had never had an MI
- advise patients who have made an uncomplicated recovery after their MI that they can resume sexual activity when they feel comfortable to do so, usually after about 4 weeks
- raise the subject of sexual activity with patients within the context of cardiac rehabilitation and aftercare

Alcohol consumption:

- advise people who drink alcohol to keep weekly consumption within safe limits (≤ 21 units of alcohol per week for men, or ≤ 14 units per week for women) and to avoid binge drinking (more than 3 alcoholic drinks in 1–2 hours)

Regular physical activity

- advise people to undertake regular physical activity sufficient to increase exercise capacity
- advise people to be physically active for 20–30 minutes a day to the point of slight breathlessness. Advise people who are not active to this level to increase their activity in a gradual, step-by-step way, aiming to increase their exercise capacity. They should start at a level that is comfortable, and increase the duration and intensity of activity as they gain fitness
- advice on physical activity should involve a discussion about current and past activity levels and preferences. The benefit of exercise may be enhanced by tailored advice from a suitably qualified professional

Health benefits of weight loss

Healthcare professionals should discuss the health benefits associated with sustained modest weight loss:

- improved lipid profiles
- reduced osteoarthritis-related disability
- lowered all-cause cancer and diabetes mortality in some patient groups
- reduced blood pressure
- improved glycaemic control
- reduction in risk of type 2 diabetes
- potential for improved lung function in patients with asthma

Text based on:

[SIGN 115 Obesity](#)

[NICE CG189 Obesity: identification, assessment and management of overweight and obesity in children, young people and adults](#)

[NICE PH53 Managing overweight and obesity in adults – lifestyle weight management services](#)

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Weight management programmes

- Individuals asking about weight management should be encouraged to be physically active and reduce sedentary behaviour, including television watching
- Healthcare professionals should discuss willingness to change with patients and then target weight loss interventions according to patient willingness around each component of behaviour required for weight loss, e.g. specific dietary and/or activity changes
- Overweight and obese individuals should be prescribed a volume of physical activity equal to approximately 1,800-2,500 kcal/week. This corresponds to approximately 225-300 min/week of moderate intensity physical activity (which may be achieved through five sessions of 45-60 minutes per week, or lesser amounts of vigorous physical activity)

Weight management programmes should include physical activity, dietary change and behavioural components. Healthcare professionals should be aware of the following options:

- the local obesity pathway and the local strategic approach to preventing and managing obesity
- the range of local lifestyle weight management services available
- national sources of accurate information and advice, such as NHS Choices and Change4life
- continuing professional development or training opportunities on weight management

Text based on:

[SIGN 115 Obesity](#)

[NICE CG189 Obesity: identification, assessment and management of overweight and obesity in children, young people and adults](#)

[NICE PH53 Managing overweight and obesity in adults – lifestyle weight management services](#)

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Heart failure case study: Henry's story (48 years old)

I've had high blood pressure for years...I guess I just didn't take it very seriously as I was feeling so well in myself. It was only when I felt constantly worn out that I decided to go to the doctor. I assumed it was something that would just get better over time, but after more investigations I was diagnosed with heart failure. I've been feeling a bit low about all of this, and have recently been [diagnosed with depression](#). Since starting treatment, I'm starting to feel a bit brighter. I've started to [exercise](#) too and I really enjoy it...who would have thought?!

I've finally [stopped smoking](#) and I've also managed to stop drinking alcohol completely too...I was so used to coming home from a hard day at work to a couple of beers, I guess I just didn't see how it can sneak up on you, and when I think about it, I was drinking far too much. It was only from talking with the team that look after me that I realised it was as much my responsibility to manage this condition as theirs – so it's a real joint effort. My wife is heavily involved too, and it's her support that really gets me through. That's not to say the local cardiac support network aren't handy...I was a little reluctant when I was first given the information but meeting other people who are in the same boat as you just makes you feel less alone, you know what I mean?

It doesn't take much to make me breathless, but I do what I can. I have a check up every 6 months where they give me a thorough check over and I have access to the whole multidisciplinary team, who seem to always be up to date with what the rest of the team are doing in the community...it saves me having to give lengthy updates every time, repeating myself to anybody who cares to listen! The [communication](#) really has been second to none. And I've received so much advice, which I'm sure will help me stay as independent as possible for as long as I can.

It's difficult knowing that I could die suddenly, and it's this uncertainty that can really get you down. But it's something that has been broached regularly since I was diagnosed, and I know that if I deteriorate further I will have access to the right people with palliative care skills, at the right time.

Text based on:

[NICE CG108 Chronic heart failure: Management of chronic heart failure in adults in primary and secondary care](#)

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Depression

The diagnosis of depression should be considered in all patients with heart failure.

Where depression is likely to have been precipitated by heart failure symptoms then reassessment of psychological status should be undertaken once the physical condition has stabilised following treatment for heart failure. If the symptoms have improved no further specific treatment for depression is required.

Where it is apparent that depression is co-existing with heart failure, then the patient should be treated for depression in line with [guidelines on depression](#).

Patients with heart failure should consult a healthcare professional before using over-the-counter therapies for depression such as St John's wort (*Hypericum perforatum*). Healthcare professionals should be aware of the potential interaction with prescribed medication, and always ask about self-medication, including the use of herbal products.

Depression

Healthcare professionals should be alert to the presence of depression in patients with a chronic physical health problem. The presence of anxiety and depression should be considered in patients:

- who are hypoxic
- who have severe dyspnoea
- who have been seen at or admitted to a hospital with an exacerbation of COPD

Consider asking patients who may have depression two questions, specifically:

- during the last month, have you often been bothered by feeling down, depressed or hopeless?
- during the last month, have you often been bothered by having little interest or pleasure in doing things?

If a patient with a chronic physical health problem answers 'yes' to either of the depression identification questions but the practitioner is not competent to perform a mental health assessment, they should refer the patient to an appropriate professional. The patient's GP should be informed of the referral.

Physical activity programmes for patients with persistent sub-threshold depressive symptoms or mild to moderate depression and a chronic physical health problem, and for patients with sub-threshold depressive symptoms that complicate the care of the chronic physical health problem, should:

- be modified (in terms of the duration of the programme and frequency and length of the sessions) for different levels of physical ability as a result of the particular chronic physical health problem, in liaison with the team providing care for the physical health problem
- be delivered in groups with support from a competent practitioner
- consist typically of 2-3 sessions per week of moderate duration (45 minutes to 1 hour) over 10 to 14 weeks (average 12 weeks)
- be coordinated or integrated with any rehabilitation programme for the chronic physical health problem

Text based on:

[NICE CG91 Depression in adults with a chronic physical health problem: Treatment and management](#)

[SIGN 114 Non-pharmaceutical management of depression in adults](#)

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Exercise advice

Offer a supervised group exercise-based rehabilitation programme designed for patients with heart failure, which may be incorporated within an existing [cardiac rehabilitation programme](#):

- ensure the patient is stable and does not have a condition or device that would preclude an exercise-based rehabilitation programme
- include a psychological and educational component in the programme

Cardiac rehabilitation

Who should attend?

All patients (regardless of their age) should be advised about and offered a cardiac rehabilitation programme with an exercise component

Patients should not be excluded from the entire programme if they choose not to attend certain components

If a patient has cardiac or other clinical conditions that may worsen during exercise, these should be treated if possible before the patient is offered the exercise component of cardiac rehabilitation. For some patients, the exercise component may be adapted by an appropriately qualified healthcare professional

Patients with left ventricular dysfunction who are stable can safely be offered the exercise component of cardiac rehabilitation

How should cardiac rehab programmes be conducted?

Take into account the patient's physical and psychological status, as well as the type of activity planned when offering advice about the timing of returning to normal activities

An estimate of the physical demand of a particular activity, and a comparison between activities, can be made using tables of metabolic equivalents (METs) of different activities (further information can be found on the [Centers for Disease Control and Prevention website](#))

Advise patients on how to use a perceived exertion scale to help monitor physiological demand
Patients who have had a complicated MI may need expert advice

Advice on competitive sport may need expert assessment of function and risk, and is dependent on what sport is being discussed and the level of competitiveness

A home-based programme validated for patients who have had an MI (such as [The Heart Manual](#)), can be offered

How to encourage people to attend?

Deliver cardiac rehabilitation in a non-judgemental, respectful and culturally sensitive manner. Consider employing bilingual peer educators or cardiac rehabilitation assistants

Discuss with the person any factors that might stop them attending a cardiac rehabilitation programme, such as transport difficulties

Offer cardiac rehabilitation programmes in a choice of venues (e.g. home, hospital and community) and at a choice of times of day, for example, sessions outside of working hours

Provide a range of different types of exercise, to meet the needs of people of all ages, or those with significant comorbidity

Offer single-sex cardiac rehabilitation programme classes if there is sufficient demand

Ensure that there are clear lines of responsibility for arranging the early initiation of cardiac rehabilitation

Encourage all staff, including senior medical staff, involved in providing care for people after an MI, to actively promote cardiac rehabilitation

Begin cardiac rehabilitation as soon as possible after admission and before discharge from hospital

Invite the person to a cardiac rehabilitation session which should start within 10 days of their discharge from hospital

Contact people who do not start or do not continue to attend the cardiac rehabilitation programme with a further reminder, such as:

- a motivational letter
- a prearranged visit from a member of the cardiac rehabilitation team
- a telephone call
- a combination of the above

Seek feedback from cardiac rehabilitation programme users and aim to use this feedback to increase the number of people starting and attending the programme

Make cardiac rehabilitation equally accessible and relevant to all people after an MI, particularly people from groups that are less likely to access this service

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Smoking cessation

Smoking cessation in secondary care

- During the first face-to-face contact, ask everyone if they smoke or have recently stopped smoking. Record smoking status and the date they stopped, if applicable, in the person's records. If a person is unable to or does not want to talk about smoking, note this in their records and ask about their smoking status at the first available opportunity.
- Advise everyone who smokes that secondary care settings are smoke free, and they must therefore abstain from smoking while admitted to or using secondary care services.
- Encourage everyone who smokes to stop smoking completely. Explain that help is available.
- Offer and, if the person agrees, arrange for them to receive intensive behavioural support, either during their current outpatient visit or during their inpatient stay.
- For people using secondary care services in a community setting, staff who are trained to provide intensive behavioural support should offer and provide support. Other staff should offer and, if accepted, arrange a referral to a local stop smoking service.
- If a person declines help to stop smoking, leave the offer open. At subsequent contacts, offer the support again.
- Ensure all actions, discussions and decisions related to stop smoking advice, referrals or interventions are recorded in the person's records (preferably computer-based).

Tobacco: harm reduction approaches to smoking

- Harm reduction may be useful for people who:
 - may not be able (or do not want) to stop smoking in one step
 - may want to stop smoking, without necessarily giving up nicotine
 - may not be ready to stop smoking, but want to reduce the amount they smoke
- If someone does not want, is not ready or is unable to stop smoking in one step, ask if they would like to consider a harm-reduction approach and refer onwards as necessary.

Smokeless tobacco cessation: South Asian communities

- Ask people if they use smokeless tobacco, using the names that the various products are known by locally. If necessary, show them a picture of what the products look like, using visual aids. (This may be necessary if the person does not speak English well or does not understand the terms being used.) Record the outcome in the patient notes.
- If someone uses smokeless tobacco, ensure they are aware of the health risks (for example, the risk of cardiovascular disease, oropharyngeal cancers and periodontal disease). Use a brief intervention to advise them to stop.
- In addition to delivering a brief intervention, refer people who want to quit to local specialist tobacco cessation services.
- Record the response to any attempts to encourage or help them to stop using smokeless tobacco in the patient notes (as well as recording whether they smoke).

Text based on:

[NICE PH48 Smoking cessation in secondary care: acute, maternity and mental health services](#)

[NICE PH45 Tobacco: harm-reduction approaches to smoking](#)

[NICE PH39 Smokeless tobacco cessation: South Asian communities](#)

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Communication

Good communication between healthcare professionals and patients and carers is essential for the best management of heart failure:

- listen to patients and respect their views and beliefs
- give patients the information they ask for or need about their condition, its treatment and prognosis, in a way they can understand including information about any serious side effects of drugs
- provide the most important information first, explaining how each item will affect patients personally
- present information in separate categories
- make advice specific, detailed and concrete
- use words the patients will understand; confirm understanding by questions; define unfamiliar words; write down key words; draw diagrams and keep a copy in the medical notes
- repeat the information using the same words each time
- prepare material, written or taped, to back up handwritten notes
- share information with patients' partners, close relatives or carers if they ask you to do so. When patients cannot indicate their consent for such sharing of information, it is advisable to share the information that those close to the patient need or want to know, except where you have reason to believe that the patient would object if able to do so
- the content, style and timing of information provision should be tailored to the needs of the individual patient
- healthcare professionals should assess cognitive ability when sharing information
- carers and relatives of patients who are cognitively impaired should be made aware of treatment regimes for the patients they care for and be encouraged to identify any need for clinical support

Advice

People with heart failure should be offered the following advice:

- healthcare professionals should be prepared to broach sensitive issues with patients, such as sexual activity, as these are unlikely to be raised by the patient
- patients with heart failure should be offered an annual vaccination against influenza
- patients with heart failure should be offered vaccination against pneumococcal disease (only required once)
- air travel will be possible for the majority of patients with heart failure, depending on their clinical condition at the time of travel
- healthcare professionals should be up to date with the latest Driver and Vehicle Licensing Agency guidelines for those with Large Goods Vehicle and Passenger Carrying Vehicle licences

Non-CF Bronchiectasis case study: Bertha's story (56 years old)

I'd always been prone to chest infections, but over the last few years I noticed that they were becoming much more frequent and I was constantly coughing up phlegm. That's when I went to the doctors and they [suspected bronchiectasis](#). After a lot of tests, I was diagnosed with bronchiectasis.

I was referred to see a [physiotherapist to help me with my phlegm](#), our session went something like this:

Physio: Bertha, now we've had a bit of a chat about how you've been doing since your diagnosis...do you know what it is that you're here to see me about today?

Me: Well...I think it's to help me...[coughs, rattly sounding]...see? With my phlegm.

Physio: Ah, that cough does seem to be quite irritating for you.

Me: You can say that again [sharp intake of breath] it's a nightmare!

Physio: It's really important that we help you to clear that phlegm with as little effort as possible. We can try a treatment called ["airway clearance techniques"](#), which aims to help you move your phlegm so you can cough it up or swallow it, rather than it staying in your lungs.

We discussed quite a few different options and tried some things out, but in the end, the one that I found best was ACBT. I managed quite well with this for a while, and the physio reviewed me again a couple of months later. Although I was clearing my phlegm, I was still getting really breathless when trying to do any of my usual chores...even the ironing was making me feel like I was trying to catch my breath. But now I've started going to [pulmonary rehab](#), which is brilliant! It gets me out of the house, I get a chance to chat with other people with similar problems and I've noticed that I'm able to do more now without getting quite so breathless. I think the breathing training (inspiratory muscle training) has helped too. Exercise has played such an important part in helping me stay well, that it's become a regular activity, even after the pulmonary rehab classes stop.

Physiotherapy for patients with non-CF bronchiectasis

Aims of physiotherapy for patients with non-CF bronchiectasis:

- maintain or improve pulmonary function
- reduce exacerbations
- improve quality of life by reducing daily symptoms and exacerbations

Airway clearance techniques

Airway clearance techniques

- ACBT (plus postural drainage) and oscillating positive expiratory devices (plus postural drainage and FET)
- Postural drainage
- FET
- AD and PEP as an alternative if the above techniques are not effective or acceptable to the patient
- NIV or IPPB to offset the increased load in a breathless patient requiring postural drainage for clearing secretions
- Modified gravity-assisted positions (no head-down tilt) should be offered where conventional tipped position is contraindicated or unacceptable to the patient
- For an exacerbation or when the patient is more fatigued than usual, you can also offer manual techniques

Airway clearance adjuncts

- Sterile water inhalation may be used before airway clearance to facilitate clearance
- The use of nebulised normal saline prior to airway clearance could be considered to increase sputum yield, reduce sputum viscosity and improve ease of expectoration
- The use of nebulised hypertonic saline prior to airway clearance could be considered to increase sputum yield, reduce sputum viscosity and improve ease of expectoration
- When nebulised hypertonic saline is first administered, FEV₁ or PEF readings should be done before and 5 minutes after treatment to assess for bronchoconstriction
- When nebulising hypertonic saline, pretreat with a bronchodilator in those with bronchial hyper-reactivity
- Consider sputum nebulised β_2 agonists prior to treatment to enhance sputum clearance
- If the patient is becoming fatigued or finding airway clearance difficult, you can consider using NIV/IPPB to augment tidal volume and reduce the work of breathing

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Who to investigate for bronchiectasis

Children

Consideration should be given to evaluating a child for bronchiectasis who presents with:

- chronic moist/productive cough, especially between viral colds or with positive bacterial cultures
- asthma that does not respond to treatment
- a single positive sputum culture, in the setting of chronic respiratory symptoms, for *Staphylococcus aureus*, *Haemophilus influenzae*, *Pseudomonas aeruginosa*, non-tuberculous mycobacteria or *Burkholderia cepacia* complex
- an episode of severe pneumonia, particularly if there is incomplete resolution of symptoms, physical signs or radiological changes
- pertussis-like illness failing to resolve after 6 months
- recurrent pneumonia
- persistent and unexplained physical signs or chest radiographic abnormalities
- localised chronic bronchial obstruction
- respiratory symptoms in children with structural or functional disorders of the oesophagus and upper respiratory tract
- unexplained haemoptysis
- respiratory symptoms with any clinical features of cystic fibrosis, primary ciliary dyskinesia or immunodeficiency

Adults

Bronchiectasis should be considered in all adults who have:

- persistent productive cough. Factors favouring further investigation are any one of the following:
 - young age at presentation
 - history of symptoms over many years
 - absence of smoking history
 - daily expectoration of large volumes of very purulent sputum
 - haemoptysis
 - sputum colonisation with *Pseudomonas aeruginosa*
- unexplained haemoptysis or non-productive cough
- patients thought to have chronic obstructive pulmonary disease may have bronchiectasis alone or in addition and referral for investigation is appropriate if:
 - management is not straightforward
 - there is slow recovery from lower respiratory tract infections
 - recurrent exacerbations
 - there is no history of smoking

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Pulmonary Rehabilitation (PR) guidelines

Aim of PR: To improve exercise capacity, dyspnoea, health status and psychological wellbeing.

What should be included in PR?

Should be multicomponent, multidisciplinary interventions, tailored to the individual patient's needs

Combination of progressive muscle resistance and aerobic training to ensure strength and endurance benefits

Interval and continuous training are safe and effective

Generic exercise training with individualised intensity of the exercise is recommended

If expertise in NMES is available, selected patients (low BMI and quadriceps weakness) who are unable to participate could be considered for NMES

[Education](#)

Who should be offered PR?

All appropriate people with COPD, including those who have had a recent hospitalisation for an acute exacerbation, who consider themselves as functionally disabled (usually MRC 3 and above)
Patients with non-CF bronchiectasis who have breathlessness affecting their ADLs

How much patient commitment is required for PR?

All patients should be encouraged to continue to exercise beyond the programme upon completion of PR.
Patients should attend a minimum of 12 supervised sessions.

Who should not be offered PR?

Patients with an MRC of 5 and are housebound, and [should not routinely be offered PR within their own home](#)

Patients with asthma

Unstable angina or recent MI*

*Coexistent stable cardiovascular disease or AAA less than 5.5cm should not preclude referral or participation in moderate intensity aerobic exercise, provided blood pressure is controlled

When should people attend PR?

PR should be commenced within one month of discharge, for those admitted with an exacerbation of COPD

PR programmes should be a minimum of twice weekly supervised sessions, for 6-12 weeks either as a rolling or cohort programme

Places should be available within a reasonable time of referral

Repeat PR should be considered for those who have completed a course more than 1 year previously

Earlier repeat courses should be considered for those with accelerated physiological decline

Those who initially decline should be offered elective PR

Components that should not be used:

Supplementary oxygen (unless patient is on long-term or ambulatory oxygen)

Heliox (unless there are comorbidities which require its administration)

IMT

Hormonal supplements

Nutritional supplements

Long-term domiciliary NIV (unless already established on it)

How can I measure the effectiveness of PR?

Exercise capacity

Dyspnoea

Health status

Uptake

Adherence

Completion rates

Where should PR classes be held?

Held at convenient times

Held in buildings that are accessible (location and entrance)

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Education topics for Pulmonary Rehabilitation

Suggested topics include:

- disease education (anatomy, physiology, pathology and pharmacology, including oxygen therapy & vaccination)
- dyspnoea/symptom management, including chest clearance techniques
- smoking cessation
- energy conservation/ pacing
- nutritional advice
- managing travel
- benefits system and disabled parking badges
- advance directives (living wills)
- making a change plan
- anxiety management
- goal setting and rewards
- relaxation
- identifying and changing beliefs about exercise and health related behaviours
- loving relationships/sexuality
- exacerbation management (including when to seek help, self-management and decision making, coping with setbacks and relapses)
- home care support
- managing surgery (non thoracic)
- the benefits of physical exercise
- support groups – such as the British Lung Foundation Breathe Easy groups, which operate throughout the UK

The package should take into account the different needs of patients at different stages of their disease

Text based on: [BTS Guideline on Pulmonary Rehabilitation in Adults](#)

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Home based pulmonary rehabilitation programme

If a structured home based programme is offered, the following aspects should be considered:

- mechanisms to offer remote support
- home exercise equipment
- patient selection

Lung cancer case study: Lewis' story (76 years old)

I was diagnosed with lung cancer 10months ago and wanted to share my story, to take some of the fear away from the c word.

But I'm not trying to make it sound like things aren't difficult at all...they really are. The breathlessness is one of the worst sensations ever, but I've been exploring some different techniques for that with the physiotherapist (ones that don't involve a load more drugs!). We've been trying out breathing control, and discussed the coping strategies I use. It hasn't made the breathlessness go away, but it's certainly made it more manageable.

And whilst I'm on the topic of difficult things...smoking! I couldn't even contemplate quitting at first, even though I knew it would only increase my risk of complications. I guess it always comes down to when you're ready, and at my last appointment with the physiotherapist, I asked to be referred for [smoking cessation](#) support before she even had a chance to ask!

There's so much information to take in, but everybody has made sure that they write down all of our discussions in plain English for me to go over when I need to. Up until recently, I more or less refused to talk about the fact I was dying, and nobody tried to push it any further, which I really appreciated. I've stopped burying my head in the sand now, and am getting as much information as possible about how the [last few weeks of my life might be](#).

Text based on:

[NICE CG121 Lung Cancer: the diagnosis and treatment of lung cancer](#)

[SIGN 137: Management of lung cancer](#)

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Smoking cessation

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Smokeless tobacco cessation: South Asian communities

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Text based on:

[NICE PH48 Smoking cessation in secondary care: acute, maternity and mental health services](#)

[NICE PH45 Tobacco: harm-reduction approaches to smoking](#)

[NICE PH39 Smokeless tobacco cessation: South Asian communities](#)

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End of life care

Discussions around end of life care should be documented, in particular:

- the patient's specific concerns
- the patient's understanding of their illness and its prognosis
- the patient's values or personal goals for care
- patient preferences for the types of care or treatment that may be beneficial in the future and their availability

It is important to share information between healthcare professionals about:

- any problems the patient has
- the management plan
- what the patient has been told
- what the patient has understood (where possible)
- the involvement of other agencies
- any advance decision made by the patient

Text based on:

[NICE CG121 Lung Cancer: the diagnosis and treatment of lung cancer](#)

[SIGN 137: Management of lung cancer](#)

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Pneumonia case study : Percy's story (78 years old)

I've not been great on my feet for a while now, but now I'm even worse! It all started back in November. I'd been seeing a physio to help with my walking (I'd had a few falls you see) and during one of their visits they got a bit worried about my breathing. I told him I'd already been seen by my GP and started on antibiotics for pneumonia. To be perfectly honest though, I was still feeling pretty ropey and really struggling to catch my breath. I felt like I was suffocating.

The physio wasn't sure if I needed to go to hospital. I was pretty reluctant when the GP came around too, but when they explained that I was triggering a score ([CRB65 score: primary care](#)) that indicated I needed to go to hospital, I came round to the idea.

I seemed to go from bad to worse, and the rest is a bit of a blur, all I remember is having the [oxygen mask on](#). But I've since been told that when they assessed me in hospital, I was triggering a score that meant they wanted to keep an eye on me ([CRB65: hospital setting](#)) and I was transferred to a ward.

According to my wife, I was very confused for a fair bit of the time- it's a bit embarrassing really as I normally pride myself in having such a sharp mind. Apparently, it's something that can happen to quite a few people, called [delirium](#). I'm quite glad I don't have much memory of it all!

I started to get much better though, but being ill really took me off my feet. I even had a [fall in hospital](#)! I was receiving a fair bit of attention from the therapy team, including the support workers- it was brilliant! I eventually got home with a little help and my physiotherapist who had been seeing me beforehand carried on working with me to get me up and going again once I was home. I honestly didn't expect to take so long to recover, but I was given this handy guide to how long it can take to really recover:

- 1 week: fever should have resolved
- 4 weeks: chest pain and sputum production should have substantially reduced
- 6 weeks: cough and breathlessness should have substantially reduced
- 3 months: most symptoms should have resolved but fatigue may still be present
- 6 months: most people will feel back to normal

I'm now 3 months down the line, and feel pretty on track. Even my walking is getting better!

For more information on the pathway for the assessment and management of community acquired pneumonia please visit: <http://pathways.nice.org.uk/pathways/pneumonia>

Text based on: [NICE CG191 Pneumonia: Diagnosis and management of community- and hospital-acquired pneumonia in adults](#)

[NICE CG161 Preventing falls in older people during a hospital stay](#)

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CRB65 score for mortality risk assessment in primary care

CRB65 score is calculated by giving 1 point for each of the following prognostic features:

- confusion (abbreviated Mental Test score ≤ 8 , or new disorientation in person, place or time)
- raised respiratory rate (≥ 30 breaths per minute)
- low blood pressure (diastolic ≤ 60 mmHg, or systolic < 90 mmHg)
- age ≥ 65 years

Patients are stratified for risk of death as follows:

0: low risk ($< 1\%$ mortality risk)

1 or 2: intermediate risk (1-10% mortality risk)

3 or 4: high risk ($> 10\%$ mortality risk)

Use clinical judgement in conjunction with the CURB65 score to guide the management of community-acquired pneumonia, as follows:

- consider home-based care for patients with a CRB65 score of 0
- consider hospital assessment for all other patients, particularly those with a CRB65 score of ≥ 2

CURB65 score for mortality risk assessment in hospital

CURB65 score is calculated by giving 1 point for each of the following prognostic features:

- confusion (abbreviated Mental Test score ≤ 8 , or new disorientation in person, place or time)
- raised blood urea nitrogen (> 7 mmol/litre)
- raised respiratory rate (≥ 30 breaths per minute)
- low blood pressure (diastolic ≤ 60 mmHg, or systolic < 90 mmHg)
- age ≥ 65 years

Patients are stratified for risk of death as follows:

0 or 1: low risk ($< 3\%$ mortality risk)

2: intermediate risk (3-15% mortality risk)

3 to 5: high risk ($> 15\%$ mortality risk)

Use clinical judgement in conjunction with the CURB65 score to guide the management of community-acquired pneumonia, as follows:

- consider home-based care for patients with a CURB65 score of 0 or 1
- consider hospital-based care for patients with a CURB65 score of ≥ 2
- consider intensive care assessment for patients with a CURB65 score of ≥ 3

Emergency oxygen

What should you do with patients with COPD (and other at risk conditions) who have had an episode of hypercapnic respiratory failure?

Give an oxygen alert card and a 24% or 28% Venturi mask

Instruct the patient to show the card to ambulance crew and emergency department staff in the event of an exacerbation

What do you do if you suspect hypercapnia or respiratory acidosis due to excessive oxygen therapy?

Step down oxygen therapy rather than discontinue completely

Use 28% or 35% oxygen from Venturi mask depending on SpO₂ and ABG results

What delivery devices should be available in hospitals where oxygen is administered?

High concentration reservoir (non-rebreathe) mask for high-concentration oxygen delivery

Nasal cannulae or simple face mask for medium-concentration therapy

24% and 28% Venturi mask for patients with definite or likely COPD or other conditions predisposing to hypercapnic respiratory failure

Tracheostomy mask for patients with a tracheostomy

Venturi masks can be substituted for nasal cannulae at low flow rates (1-2 l/min) once patient has stabilised

What about oxygen delivery for patients with prior hypercapnic respiratory failure who do NOT have an oxygen alert card?

28% Venturi mask at 4l/min at pre-hospital care
either 24% or 28% Venturi mask at 2-4l/min in hospital care
Initial target SpO₂ 88-92% pending ABG results

What are the target SpO₂ for acutely ill patients?

94-98% for those not at risk of hypercapnic respiratory failure

88-92% for patients with risk factors for hypercapnic respiratory failure

Treatment of patients with recurrent hypercapnic respiratory failure should be based on ABG estimations from previous acute exacerbations, as hypercapnic respiratory failure can occur even if SpO₂<88%

Some patients (particularly >70 years old or if obese) may have SpO₂<94% and do NOT require oxygen therapy when clinically stable

Non-hypoxaemic breathless patients do NOT benefit from oxygen therapy (except in carbon monoxide poisoning and some other rare instances), but a reduction of >3% in SpO₂ within target range may be first evidence of acute illness and should prompt further assessment

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CRB65 score for mortality risk assessment in primary care

CRB65 score is calculated by giving 1 point for each of the following prognostic features:

- confusion (abbreviated Mental Test score ≤ 8 , or new disorientation in person, place or time)
- raised respiratory rate (≥ 30 breaths per minute)
- low blood pressure (diastolic ≤ 60 mmHg, or systolic < 90 mmHg)
- age ≥ 65 years

Patients are stratified for risk of death as follows:

0: low risk ($< 1\%$ mortality risk)

1 or 2: intermediate risk (1-10% mortality risk)

3 or 4: high risk ($> 10\%$ mortality risk)

Use clinical judgement in conjunction with the CRB65 score to guide the management of community-acquired pneumonia, as follows:

- consider home-based care for patients with a CRB65 score of 0
- consider hospital assessment for all other patients, particularly those with a CRB65 score of ≥ 2

CURB65 score for mortality risk assessment in hospital

CURB65 score is calculated by giving 1 point for each of the following prognostic features:

- confusion (abbreviated Mental Test score ≤ 8 , or new disorientation in person, place or time)
- raised blood urea nitrogen (> 7 mmol/litre)
- raised respiratory rate (≥ 30 breaths per minute)
- low blood pressure (diastolic ≤ 60 mmHg, or systolic < 90 mmHg)
- age ≥ 65 years

Patients are stratified for risk of death as follows:

0 or 1: low risk ($< 3\%$ mortality risk)

2: intermediate risk (3-15% mortality risk)

3 to 5: high risk ($> 15\%$ mortality risk)

Use clinical judgement in conjunction with the CURB65 score to guide the management of community-acquired pneumonia, as follows:

- consider home-based care for patients with a CURB65 score of 0 or 1
- consider hospital-based care for patients with a CURB65 score of ≥ 2
- consider intensive care assessment for patients with a CURB65 score of ≥ 3

Delirium

What are the risk factors for delirium?

Assess patients within the first 24 hours of admission to hospital for the following risk factors. If any of these risk factors is present, the person is at risk of delirium, and should be observed at every opportunity for changes in the risk factors for delirium:

- age 65 years or older
- cognitive impairment (past or present) and/or dementia
- current hip fracture
- severe illness (a clinical condition that is deteriorating or is at risk of deterioration)

What are the indicators for delirium?

Once identified as at risk, assess for recent (within hours or days) changes or fluctuations in behaviour. These may be reported by the person at risk, or a carer or relative. Be particularly vigilant for behaviour indicating hypoactive delirium (marked*). These behaviour changes may affect:

- cognitive function: for example, worsened concentration*, slow responses*, confusion
- perception: for example, visual or auditory hallucinations
- physical function: for example, reduced mobility*, reduced movement*, restlessness, agitation, changes in appetite*, sleep disturbance
- social behaviour: for example, lack of cooperation with reasonable requests, withdrawal*, alterations in communication, mood and/or attitude

If any of these behaviour changes are present, a healthcare professional who is trained and competent in diagnosing delirium should carry out a clinical assessment to confirm the diagnosis. (e.g. The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria or short Confusion Assessment Method (short CAM) should be used. In critical care or in the recovery room after surgery, CAM-ICU should be used.

What interventions can prevent delirium?

Ensure that people at risk of delirium are cared for by a team of healthcare professionals who are familiar to the person at risk.
Based on the results of this assessment, provide a [multicomponent intervention](#) tailored to the person's individual needs and care setting

What treatment can be used for delirium?

Ensure effective communication and reorientation (explaining where the person is/who they are/what your role is) and reassure the person diagnosed with delirium. Consider involving family, friends and carers.

If a person with delirium is distressed or considered a risk to themselves or others, first use verbal and non-verbal techniques to de-escalate the situation. Distress may be less evident in people with hypoactive delirium, who can still become distressed by, for example, psychotic symptoms.

Offer information to people who are at risk of delirium or who have delirium, and their family and/or carers, which:

- informs them that delirium is common and usually temporary
- describes people's experience of delirium
- encourages people at risk and their families and/or carers to tell their healthcare team about any sudden changes or fluctuations in behaviour
- encourages the person who has had delirium to share their experience of delirium with the healthcare professional during recovery
- advises the person of any support groups

Ensure that information provided meets the cultural, cognitive and language needs of the person.

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Multicomponent intervention package

Address cognitive impairment and/or disorientation

- provide appropriate lighting and clear signage; a clock (consider providing a 24-hour clock in critical care) and a calendar should also be easily visible to the person at risk
- talk to the person to re-orientate them by explaining where they are, who they are, and what your role is
- introduce cognitively stimulating activities (for example, reminiscence)
- facilitate regular visits from family and friends

Optimise medical status

- ensure adequate fluid intake to prevent dehydration by encouraging the person to drink
- assess for hypoxia and optimise oxygen saturation if necessary, as clinically appropriate

Address immobility or limited mobility

- mobilise soon after surgery
- walk (provide appropriate walking aids if needed – these should be accessible at all times)
- encourage all people, including those unable to walk, to carry out active range-of-motion exercises

Address pain

- assess for pain
- look for non-verbal signs of pain, particularly in those with communication difficulties (for example, people with learning difficulties or dementia, or people on a ventilator or who have a tracheostomy)

Address sensory impairment

- ensure hearing and visual aids are available to and used by people who need them, and that they are in good working order

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Preventing falls

Older people in contact with healthcare professionals should be asked routinely whether they have fallen in the past year and asked about the frequency, context and characteristics of the fall/s. Those in hospital aged over 65 are at a higher risk of falling. Younger patients aged between 50-64 years old would also be at a higher risk of falling if they have an underlying condition that increases their risk.

Some of the measures to reduce the risk of falling included:

- ensuring that aspects of the inpatient environment (including flooring, lighting, furniture and fittings such as hand holds) that could affect patients' risk of falling are systematically identified and addressed
- a multifactorial assessment including
 - cognitive impairment
 - continence problems
 - falls history, including causes and consequences (such as injury and fear of falling)
 - footwear that is unsuitable or missing
 - health problems that may increase their risk of falling
 - medication
 - postural instability, mobility problems and/or balance problems
 - syncope syndrome
 - visual impairment
- ensuring that any multifactorial intervention promptly addresses the patient's identified individual risk factors for falling in hospital **and** takes into account whether the risk factors can be treated, improved or managed during the patient's expected stay. This intervention is tailored to the individual's risk factors for falling

If a person does fall in hospital, they should be provided with relevant oral and written information and support, including:

- explaining about the patient's individual risk factors for falling in hospital
- showing the patient how to use the nurse call system and encouraging them to use it when they need help
- informing family members and carers about when and how to raise and lower bed rails
- providing consistent messages about when a patient should ask for help before getting up or moving about
- helping the patient to engage in any interventions aimed at addressing their individual risk factors whilst still in hospital

Text based on: [NICE CG161 Preventing falls in older people during a hospital stay](#)

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Motor Neurone Disease case study: Mark's story (47 years old)

I was diagnosed with MND 2 years ago...I was 45 years old. I couldn't quite believe it at first, and I don't think it was until I got to the point where I couldn't walk anymore that it finally hit me.

I had one of my follow up appointments the other week with [my team](#), and the physiotherapist was asking me all sorts of questions like how I was sleeping, if I felt refreshed after a night's sleep etc etc. Turns out, my answers confirmed that I was displaying [symptoms of respiratory impairment](#). I never thought that my nightmares and disturbed sleep could have indicated that at all. They immediately sent me for more tests to check out my [respiratory function](#).

I'm a bit of a pro at these now- I had them at when I was diagnosed and every three months since then. Practice makes perfect right? Or not!! The tests confirmed that my respiratory function is deteriorating...I don't think I've felt so frightened in my life. The physiotherapist gave me lots of information and reassurance to help me digest what was happening...the main thing was that although I couldn't change what was happening, I did have a choice about how it was going to happen.

I remember the [first time I heard about NIV](#)...the physiotherapist described it to me and my family fairly soon after I'd finally accepted what was happening to my body, as a potential treatment to help ease worsening respiratory symptoms. Whilst I'd been informed that this wouldn't slow down the progression of MND, I was keen to try it out and a trial of NIV was arranged. It took a bit of getting used to, but they gradually built up the time on it until I was comfortable wearing the mask just before going to sleep - it gave me the best night's sleep I'd had for a while! We also discussed how NIV could be withdrawn at the end of my life, and talked through some other strategies to help with my breathlessness. I didn't think I want to stay on it permanently. I've made it clear that as soon as I'm starting to lose consciousness, I want the mask removed.

At the minute, I'm pretty much fully dependent on the NIV and I know that I'm approaching the last phase of my life. I have been [planning what happens towards the end](#) of my life with my family and medical team and have an advanced care plan. I'd be lying if I said I wasn't scared about what's coming up, but knowing that I've planned for this, and that everybody is supporting me to fulfil that plan does offer some relief. My family were included in the early stages of my decision making, so I'm confident that if I'm no longer able to express my wishes, my family will be able to do this for me and I'll die at home, surrounded by the people I love.

Multidisciplinary team

The team should include

- Neurologist
- Respiratory physician
- MND specialist nurse
- Respiratory specialist nurse
- Specialist respiratory physiotherapist
- Respiratory physiologist
- Specialist in palliative care
- Speech and language therapist

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Symptoms and signs of potential respiratory impairment

Symptoms	Signs
Breathlessness	Increased respiratory rate
Orthopnoea	Shallow breathing
Recurrent chest infections	Weak cough (as measured by cough peak flow)
Disturbed sleep	Abdominal paradox (inward movement of the abdomen during inspiration)
Non-refreshing sleep	Use of accessory muscles of respiration
Nightmares	Reduced chest expansion on maximal inspiration
Daytime sleepiness	
Poor concentration/ memory	
Confusion	
Hallucinations	
Morning headaches	
Fatigue	
Poor appetite	

Text based on [NICE CG105: Motor neurone disease: The use of non-invasive ventilation in the management of motor neurone disease](#)

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Respiratory function

How should I test baseline respiratory function?

SpO₂ at rest on room air

And one or both of the following

- FVC or VC
- SNIP and/or MIP

These should be measured either as part of the diagnosis of MND or soon after diagnosis

What if the patient has severe bulbar impairment or severe cognitive problems?

Measure SpO₂

Do not measure FVC/VC/SNIP/MIP if the interface is not suitable for the patient

When should I refer for ABG/CBG?

SpO₂ ≤ 92% and known lung disease

OR

SpO₂ ≤ 94% and no lung disease

When should I refer for nocturnal oximetry and/or sleep study?

SpO₂ within normal ranges but they have sleep-related [respiratory symptoms](#)

If any of the results listed in the table below are obtained, discuss with the patient and (if the patient agrees) their family and carers:

- the impact of respiratory impairment
- treatment options
- possible referral to a specialist respiratory service for further assessment

FVC/VC	SNIP/MIP
FVC/VC < 50% predicted	SNIP/MIP < 40cmH ₂ O
FVC/VC < 80% predicted plus symptoms/signs of respiratory impairment	SNIP/MIP < 65cmH ₂ O (men) < 55cmH ₂ O (women) Plus symptoms/signs of respiratory impairment
	Trend of decreasing SNIP/MIP > 10cmH ₂ O over 3 months

Symptoms and signs of potential respiratory impairment

Symptoms	Signs
Breathlessness	Increased respiratory rate
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Poor appetite	

Text based on [NICE CG105: Motor neurone disease: The use of non-invasive ventilation in the management of motor neurone disease](#)

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NIV

How should discussions about NIV be conducted?

Appropriate to the stage of the patient's illness
Carried out in a sensitive manner
MDT, patient-centred approach involving patient and family/carers

What information should discussions about NIV include?

Symptoms and signs of respiratory impairment
Natural progression of MND and what to expect in the future
The purpose, nature and timings of respiratory function tests, and explanations of test results
Interventions for managing respiratory impairment, including the benefits and limitations of each intervention
Accessing and using respiratory equipment, including NIV
How NIV can improve symptoms associated with respiratory impairment and can be life prolonging, but does not slow progression of the underlying disease
How NIV can be withdrawn
Palliative strategies as an alternative to NIV

What should the risk assessment consist of?

An MDT, patient-centred risk assessment, carried out with discussion with the patient and their family/carers
The most appropriate type of NIV ventilator and interface, based on patient need, lifestyle and tolerance of NIV
The risk and possible consequences of ventilator failure
The power supply, including battery back-up
How easily the patient can get to hospital
Risks associated with travelling away from home (especially abroad)
Whether a humidifier is required
Issues relating to secretion management
Availability of carers

What should be included in the care plan?

Long term support from MDT
Frequency of respiratory function tests and monitoring of respiratory impairment
Frequency of clinical reviews of symptomatic and physiological changes
Provision of carers
Device maintenance and 24 hour emergency clinical and technical support
Secretion management and respiratory physiotherapy assessment, including cough-assist therapy if required
Training and support for use of NIV for patient and family/carers
Regular opportunities to discuss the patients wishes in relation to continuing or withdrawing NIV, and other end of life considerations

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End of life care

Offer to discuss end-of-life care with the patient and (if the patient agrees) their family and carers, at an appropriate time and in a sensitive manner. This may be at one or more of the following times:

- around the time that MND is first diagnosed (but only if requested by the patient explicitly, or if the patient's clinical condition indicates that ventilator support will be needed in the immediate future)
- when non-invasive ventilation is accepted or declined
- when the patient is becoming increasingly dependent on non-invasive ventilation
- if the patient asks for information

Discussions about end-of-life care should include:

- planning of end-of-life care
- considering advance decisions to refuse treatment
- considering what to do if non-invasive ventilation fails because of either:
 - an acute, but potentially reversible, deterioration in health **or**
 - irreversible disease progression
- strategies to withdraw non-invasive ventilation if the patient wishes
- the involvement of family and carers in decision making (with the patient's consent if they have the capacity to give it)

Paediatric Neuromuscular Weakness and bronchiolitis case study: Bobby's story (6months old)

Bobby is a 6 month old boy who has been admitted to hospital with [bronchiolitis](#).

Normally, chest physiotherapy is not required for children with bronchiolitis (or community acquired pneumonia) who do not have relevant comorbidities (for example spinal muscular atrophy, severe tracheomalacia).

However, Bobby has a diagnosis of spinal muscular atrophy, and is at higher risk of having difficulty clearing secretions. Therefore, you have been asked to assess him.

In line with guidance, Bobby has been prescribed oxygen as his SpO₂ was persistently less than 92%.

You would not routinely perform upper airway suctioning in children with bronchiolitis, but it is appropriate in this case as Bobby is in respiratory distress because of his upper airway secretions. If he became apnoeic, you would perform upper airway suctioning even if there wasn't any sign of obvious upper airway secretions.

Although not relevant to Bobby at this point, you have a range of [airway clearance techniques](#) that you could use in other situations.

You are aware that CPAP can be considered in children with bronchiolitis who have [impending respiratory failure](#). However, on discussion with the MDT, you decide to start Bobby on BiPAP as Bobby is in acute respiratory failure. Unfortunately, Bobby's condition continues to deteriorate and he requires intubating. After two months on intensive care, Bobby remains critically unwell. Bobby's parents already have an advanced care plan in place, which they use with the MDT to decide on how to plan for Bobby to have improved care in the right setting towards the end of his life. By accessing multidimensional coordinated palliative care support, Bobby is able to die at home peacefully with his parents.

Text based on:

[NICE NG9 Bronchiolitis in children](#)

[BTS Respiratory Management of Children with Neuromuscular Weakness Guideline](#)

[BTS Community Acquired Pneumonia in Children Guideline](#)



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Considerations for diagnosis of bronchiolitis

Diagnose bronchiolitis if the child has cold symptoms lasting 1 to 3 days, followed by:

- persistent cough **and**
- either tachypnoea or chest recession (or both) **and**
- either wheeze or crackles on chest auscultation (or both)

When diagnosing bronchiolitis, take into account that the following symptoms are common in children with this disease:

- fever (in around 30% of cases, usually of less than 39°C)
- poor feeding (typically after 3 to 5 days of illness)

When diagnosing bronchiolitis, take into account that young infants with this disease (in particular those under 6 weeks of age) may present with apnoea without other clinical signs.

Consider a diagnosis of pneumonia if the child has:

- high fever (over 39°C) and/or
- persistently focal crackles

Airway clearance

Airway clearance techniques should be used during respiratory infection when oxygen saturation levels fall below 95% while the child is breathing room air. If the techniques being used fail to result in an increase in oxygen saturation to 95% or above, different methods of airway clearance should be used. This may require attendance at hospital for treatment.

Children with ineffective cough (including children over 12 years of age with cough peak flow < 270 litres/min), particularly if they have had episodes of deterioration with respiratory infection, should be taught augmented cough techniques.

Manual cough assist and air-stacking methods to achieve maximum insufflation capacity are effective methods of improving cough efficiency and should be used when appropriate.

MI-E should be considered in very weak children, those with loss of bulbar function, and those who cannot cooperate with manual cough assist or air-stacking or in whom these methods are not effective.

MI-E should be available in the acute setting in all hospitals that treat neuromuscular patients as an alternative method of airway clearance with the purpose of preventing deterioration and the need for intubation and mechanical ventilation.

Oscillatory techniques such as high-frequency chest wall oscillation and intrapulmonary percussive ventilation should be considered in children who have difficulty mobilising secretions or who have persistent atelectasis, despite use of other airway clearance techniques.

Impending respiratory failure

Suspect impending respiratory failure and take appropriate action as these children may need intensive care if any of the following are present:

- signs of exhaustion, for example listlessness or decreased respiratory effort
- recurrent apnoea
- failure to maintain adequate oxygen saturation despite oxygen supplementation

Text based on:

[BTS Respiratory Management of Children with Neuromuscular Weakness Guideline](#)

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Pulmonary Rehabilitation (PR) guidelines

Aim of PR: To improve exercise capacity, dyspnoea, health status and psychological wellbeing.

What should be included in PR?

Should be multicomponent, multidisciplinary interventions, tailored to the individual patient's needs

Combination of progressive muscle resistance and aerobic training to ensure strength and endurance benefits

Interval and continuous training are safe and effective

Generic exercise training with individualised intensity of the exercise is recommended

If expertise in NMES is available, selected patients (low BMI and quadriceps weakness) who are unable to participate could be considered for NMES.

[Education](#)

Who should be offered PR?

All appropriate people with COPD, including those who have had a recent hospitalisation for an acute exacerbation, who consider themselves as functionally disabled (usually MRC 3 and above)
Patients with non-CF bronchiectasis who have breathlessness affecting their ADLs

How much patient commitment is required for PR?

All patients should be encouraged to continue to exercise beyond the programme upon completion of PR.
Patients should attend a minimum of 12 supervised sessions.

Who should not be offered PR?

Patients with an MRC of 5 and are housebound, and [should not routinely be offered PR within their own home](#)

Patients with asthma

Unstable angina or recent MI*

*Coexistent stable cardiovascular disease or AAA less than 5.5cm should not preclude referral or participation in moderate intensity aerobic exercise, provided blood pressure is controlled.

When should people attend PR?

PR should be commenced within one month of discharge, for those admitted with an exacerbation of COPD

PR programmes should be a minimum of twice weekly supervised sessions, for 6-12 weeks either as a rolling or cohort programme

Places should be available within a reasonable time of referral

Repeat PR should be considered for those who have completed a course more than 1 year previously

Earlier repeat courses should be considered for those with accelerated physiological decline

Those who initially decline should be offered elective PR

Components that should not be used:

Supplementary oxygen (unless patient is on long-term or ambulatory oxygen)

Heliox (unless there are comorbidities which require its administration)

IMT

Hormonal supplements

Nutritional supplements

Long-term domiciliary NIV (unless already established on it)

How can I measure the effectiveness of PR?

Exercise capacity

Dyspnoea

Health status

Uptake

Adherence

Completion rates

Where should PR classes be held?

Held at convenient times

Held in buildings that are accessible (location and entrance)

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Education topics for Pulmonary Rehabilitation

Suggested topics include:

- disease education (anatomy, physiology, pathology and pharmacology, including oxygen therapy & vaccination)
- dyspnoea/symptom management, including chest clearance techniques
- smoking cessation
- energy conservation/ pacing
- nutritional advice
- managing travel
- benefits system and disabled parking badges
- advance directives (living wills)
- making a change plan
- anxiety management
- goal setting and rewards
- relaxation
- identifying and changing beliefs about exercise and health related behaviours
- loving relationships/sexuality
- exacerbation management (including when to seek help, self-management and decision making, coping with setbacks and relapses)
- home care support
- managing surgery (non thoracic)
- the benefits of physical exercise
- support groups – such as the British Lung Foundation Breathe Easy groups, which operate throughout the UK

The package should take into account the different needs of patients at different stages of their disease.

Text based on: [BTS Guideline on Pulmonary Rehabilitation in Adults](#)

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Home based pulmonary rehabilitation programme

If a structured home based programme is offered, the following aspects should be considered:

- mechanisms to offer remote support
- home exercise equipment
- patient selection

Smoking cessation

Smoking cessation in secondary care

- During the first face-to-face contact, ask everyone if they smoke or have recently stopped smoking. Record smoking status and the date they stopped, if applicable, in the person's records. If a person is unable to or does not want to talk about smoking, note this in their records and ask about their smoking status at the first available opportunity.
- Advise everyone who smokes that secondary care settings are smoke free, and they must therefore abstain from smoking while admitted to or using secondary care services.
- Encourage everyone who smokes to stop smoking completely. Explain that help is available.
- Offer and, if the person agrees, arrange for them to receive intensive behavioural support, either during their current outpatient visit or during their inpatient stay.
- For people using secondary care services in a community setting, staff who are trained to provide intensive behavioural support should offer and provide support. Other staff should offer and, if accepted, arrange a referral to a local stop smoking service.
- If a person declines help to stop smoking, leave the offer open. At subsequent contacts, offer the support again.
- Ensure all actions, discussions and decisions related to stop smoking advice, referrals or interventions are recorded in the person's records (preferably computer-based).

Tobacco: harm reduction approaches to smoking

- Harm reduction may be useful for people who:
 - may not be able (or do not want) to stop smoking in one step
 - may want to stop smoking, without necessarily giving up nicotine
 - may not be ready to stop smoking, but want to reduce the amount they smoke
- If someone does not want, is not ready or is unable to stop smoking in one step, ask if they would like to consider a harm-reduction approach and refer onwards as necessary.

Smokeless tobacco cessation: South Asian communities

- Ask people if they use smokeless tobacco, using the names that the various products are known by locally. If necessary, show them a picture of what the products look like, using visual aids. (This may be necessary if the person does not speak English well or does not understand the terms being used.) Record the outcome in the patient notes.
- If someone uses smokeless tobacco, ensure they are aware of the health risks (for example, the risk of cardiovascular disease, oropharyngeal cancers and periodontal disease). Use a brief intervention to advise them to stop.
- In addition to delivering a brief intervention, refer people who want to quit to local specialist tobacco cessation services.
- Record the response to any attempts to encourage or help them to stop using smokeless tobacco in the patient notes (as well as recording whether they smoke).

Text based on:

[NICE PH48 Smoking cessation in secondary care: acute, maternity and mental health services](#)

[NICE PH45 Tobacco: harm-reduction approaches to smoking](#)

[NICE PH39 Smokeless tobacco cessation: South Asian communities](#)

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Emergency oxygen

What should you do with patients with COPD (and other at risk conditions) who have had an episode of hypercapnic respiratory failure?

Give an oxygen alert card and a 24% or 28% Venturi mask

Instruct the patient to show the card to ambulance crew and emergency department staff in the event of an exacerbation

What do you do if you suspect hypercapnia or respiratory acidosis due to excessive oxygen therapy?

Step down oxygen therapy rather than discontinue completely

Use 28% or 35% oxygen from Venturi mask depending on SpO₂ and ABG results

What delivery devices should be available in hospitals where oxygen is administered?

High concentration reservoir (non-rebreathe) mask for high-concentration oxygen delivery

Nasal cannulae or simple face mask for medium-concentration therapy

24% and 28% Venturi mask for patients with definite or likely COPD or other conditions predisposing to hypercapnic respiratory failure

Tracheostomy mask for patients with a tracheostomy

Venturi masks can be substituted for nasal cannulae at low flow rates (1-2 l/min) once patient has stabilised

What about oxygen delivery for patients with prior hypercapnic respiratory failure who do NOT have an oxygen alert card?

28% Venturi mask at 4l/min at pre-hospital care
either 24% or 28% Venturi mask at 2-4l/min in hospital care
Initial target SpO₂ 88-92% pending ABG results

What are the target SpO₂ for acutely ill patients?

94-98% for those not at risk of hypercapnic respiratory failure

88-92% for patients with risk factors for hypercapnic respiratory failure

Treatment of patients with recurrent hypercapnic respiratory failure should be based on ABG estimations from previous acute exacerbations, as hypercapnic respiratory failure can occur even if SpO₂<88%

Some patients (particularly >70 years old or if obese) may have SpO₂<94% and do NOT require oxygen therapy when clinically stable

Non-hypoxaemic breathless patients do NOT benefit from oxygen therapy (except in carbon monoxide poisoning and some other rare instances), but a reduction of >3% in SpO₂ within target range may be first evidence of acute illness and should prompt further assessment

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The acutely unwell patient

Which physiological observations should be taken at initial assessment and during routine monitoring?

heart rate
respiratory rate
systolic blood pressure
level of consciousness
oxygen saturation (plus percentage/ flow rate of oxygen)
temperature
state of hydration

Additional monitoring to consider:

- hourly urine output
- biochemical analysis, e.g. lactate, blood glucose, base deficit, arterial pH
- pain assessment

What should track and trigger systems consist of?

Should use multiple criteria (based on the physiological observations) or weighted scoring systems, which allow a graded response. These scoring systems should:

- define the parameters to be measured and the frequency of observations
- include a clear and explicit statement of the parameters, cut-off points or scores that should trigger a response
- have thresholds that are set locally and reviewed regularly to optimise sensitivity and specificity

What should happen in a clinical emergency?

Patients identified as a 'clinical emergency' should bypass the graded response system. With the exception of those with a cardiac arrest, they should be treated in the same way as the high-score group. For patients in the high- and medium-score groups, healthcare professionals should:

- initiate appropriate interventions
- assess response
- formulate a management plan, including location and level of care



Low score

Increased frequency of observations and the nurse in charge alerted.



Medium score

Urgent call to team with primary medical responsibility for the patient. Simultaneous call to personnel with core competencies for acute illness e.g. a critical care outreach team, a hospital-at-night team or a specialist trainee in an acute medical or surgical speciality.



High score

Emergency call to team with critical care competencies and diagnostic skills. The team should include a medical practitioner skilled in the assessment of the critically ill patient, who possesses advanced airway management and resuscitation skills. There should be an immediate response.

What about patients with limited reversibility?

Patients identified as deteriorating with limited reversibility should have a written management plan which considers and includes:

- key issues
- anticipated outcomes which acknowledge uncertainty
- resuscitation status
- discussions with the multidisciplinary team
- discussion with the patient and family, which may include discussion of uncertain recovery and medical plan, preferred place of care and concerns or wishes
- standardised and agreed ceilings of care

What are the suggested staff competencies?

Staff caring for patients in acute hospital settings should have competencies in monitoring, measurement, interpretation and prompt response to the acutely ill patient appropriate to the level of care they are providing. Education and training should be provided to ensure staff have these competencies, and they should be assessed to ensure they can demonstrate them.

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Delirium

What are the risk factors for delirium?

Assess patients within the first 24 hours of admission to hospital for the following risk factors. If any of these risk factors is present, the person is at risk of delirium, and should be observed at every opportunity for changes in the risk factors for delirium:

- age 65 years or older
- cognitive impairment (past or present) and/or dementia
- current hip fracture
- severe illness (a clinical condition that is deteriorating or is at risk of deterioration)

What are the indicators for delirium?

Once identified as at risk, assess for recent (within hours or days) changes or fluctuations in behaviour. These may be reported by the person at risk, or a carer or relative. Be particularly vigilant for behaviour indicating hypoactive delirium (marked*). These behaviour changes may affect:

- cognitive function: for example, worsened concentration*, slow responses*, confusion
- perception: for example, visual or auditory hallucinations
- physical function: for example, reduced mobility*, reduced movement*, restlessness, agitation, changes in appetite*, sleep disturbance
- social behaviour: for example, lack of cooperation with reasonable requests, withdrawal*, alterations in communication, mood and/or attitude

If any of these behaviour changes are present, a healthcare professional who is trained and competent in diagnosing delirium should carry out a clinical assessment to confirm the diagnosis. (e.g. The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria or short Confusion Assessment Method (short CAM) should be used. In critical care or in the recovery room after surgery, CAM-ICU should be used.

What interventions can prevent delirium?

Ensure that people at risk of delirium are cared for by a team of healthcare professionals who are familiar to the person at risk. Based on the results of this assessment, provide a [multicomponent intervention](#) tailored to the person's individual needs and care setting

What treatment can be used for delirium?

Ensure effective communication and reorientation (explaining where the person is/who they are/what your role is) and reassure the person diagnosed with delirium. Consider involving family, friends and carers.

If a person with delirium is distressed or considered a risk to themselves or others, first use verbal and non-verbal techniques to de-escalate the situation. Distress may be less evident in people with hypoactive delirium, who can still become distressed by, for example, psychotic symptoms.

Offer information to people who are at risk of delirium or who have delirium, and their family and/or carers, which:

- informs them that delirium is common and usually temporary
- describes people's experience of delirium
- encourages people at risk and their families and/or carers to tell their healthcare team about any sudden changes or fluctuations in behaviour
- encourages the person who has had delirium to share their experience of delirium with the healthcare professional during recovery
- advises the person of any support groups

Ensure that information provided meets the cultural, cognitive and language needs of the person.

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Multicomponent intervention package

Address cognitive impairment and/or disorientation

- provide appropriate lighting and clear signage; a clock (consider providing a 24-hour clock in critical care) and a calendar should also be easily visible to the person at risk
- talk to the person to re-orientate them by explaining where they are, who they are, and what your role is
- introduce cognitively stimulating activities (for example, reminiscence)
- facilitate regular visits from family and friends.

Optimise medical status

- ensure adequate fluid intake to prevent dehydration by encouraging the person to drink
- assess for hypoxia and optimise oxygen saturation if necessary, as clinically appropriate

Address immobility or limited mobility

- mobilise soon after surgery
- walk (provide appropriate walking aids if needed – these should be accessible at all times)
- encourage all people, including those unable to walk, to carry out active range-of-motion exercises

Address pain

- assess for pain
- look for non-verbal signs of pain, particularly in those with communication difficulties (for example, people with learning difficulties or dementia, or people on a ventilator or who have a tracheostomy)

Address sensory impairment

- ensure hearing and visual aids are available to and used by people who need them, and that they are in good working order

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Depression

Healthcare professionals should be alert to the presence of depression in patients with a chronic physical health problem. The presence of anxiety and depression should be considered in patients:

- who are hypoxic
- who have severe dyspnoea
- who have been seen at or admitted to a hospital with an exacerbation of COPD

Consider asking patients who may have depression two questions, specifically:

- during the last month, have you often been bothered by feeling down, depressed or hopeless?
- during the last month, have you often been bothered by having little interest or pleasure in doing things?

If a patient with a chronic physical health problem answers 'yes' to either of the depression identification questions but the practitioner is not competent to perform a mental health assessment, they should refer the patient to an appropriate professional. The patient's GP should be informed of the referral.

Physical activity programmes for patients with persistent sub-threshold depressive symptoms or mild to moderate depression and a chronic physical health problem, and for patients with sub-threshold depressive symptoms that complicate the care of the chronic physical health problem, should:

- be modified (in terms of the duration of the programme and frequency and length of the sessions) for different levels of physical ability as a result of the particular chronic physical health problem, in liaison with the team providing care for the physical health problem
- be delivered in groups with support from a competent practitioner
- consist typically of 2-3 sessions per week of moderate duration (45 minutes to 1 hour) over 10 to 14 weeks (average 12 weeks)
- be coordinated or integrated with any rehabilitation programme for the chronic physical health problem

Text based on:

[NICE CG91 Depression in adults with a chronic physical health problem: Treatment and management](#)

[SIGN 114 Non-pharmaceutical management of depression in adults](#)

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Long term Oxygen Therapy (LTOT)

When should I refer somebody for LTOT assessment?

Patients with a resting stable SpO₂ ≤ 92% should be referred for ABGs to assess eligibility for LTOT

Wait at least 8 weeks after exacerbation for a formal assessment for LTOT

Written and verbal information should be given to patients referred to home oxygen assessment services at the time of referral

What is the guidance on AOT/SBOT?

AOT should not be routinely offered to patients who are ineligible for LTOT or who are already on LTOT

AOT assessment should only be offered to patients already on LTOT if they are mobile outdoors

Patients initiated on LTOT who are active outdoors should receive an AOT assessment to assess whether their flow rate needs increasing during exercise

AOT should only be offered to patients for use during exercise following a formal assessment demonstrating improvement in exercise endurance

SBOT delivering high flow oxygen therapy (12 L/min via a non-rebreather mask) should be offered to treat acute attacks of cluster headache

What are the patient safety considerations?

Discuss smoking cessation

For patients who continue to smoke, discuss potential for limited clinical benefit

Provide written education prior to ordering home oxygen and at each subsequent review if the patient continues to smoke

Warn patients and family members who smoke in the presence of home oxygen of the dangers of smoking in the presence of oxygen

Patients should be made aware in writing of the dangers of using home oxygen within the vicinity of any naked flame

How should patients be followed up?

Patients commenced on LTOT post hospital discharge should be advised it may be removed if reassessment shows clinical improvement

LTOT patients should receive follow-up at 3 months after LTOT has been ordered, including assessment of ABGs and flow rate

LTOT patients should then receive follow-up visits at 6– 12 months (either home based or in combination with hospital visits)

Follow-up visits should be conducted by a specialist home oxygen assessment team with the necessary skills to deliver patient education and manage withdrawal of home oxygen

How can the oxygen be delivered?

Oxygen concentrators should be used to deliver LTOT at flow rates of 4 L/min or less, for at least 15 hours a day

Portable oxygen should be delivered by whatever mode is best suited to the individual in order to increase the daily amount of oxygen used and activity levels in mobile patients

Nasal cannulae should be considered as the first choice of delivery device. Some patients may benefit from, or prefer, a Venturi mask

Oxygen-conserving devices can be used in patients requiring high flow rates to increase the time the cylinder will last

Humidification of home oxygen should only be ordered for tracheostomy patients

Less able patients should be offered wheeled devices or backpacks if assessment shows they improve ambulation and quality of life

What oxygen flow rate should be used?

Start on a flow rate of 1 L/min, titrating up by 1 L/min until SpO₂ >90% and PaO₂ ≥8 kPa at rest

Non-hypercapnic patients should increase flow rate by 1 L/min during sleep in the absence of any contraindications

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Overweight and obesity in adults: identification, assessment, and intervention

Use clinical judgement to decide when to measure a person's height and weight. Opportunities include registration with a general practice, consultation for related conditions (such as type 2 diabetes and cardiovascular disease) and other routine health checks. Use the information below to decide on the level of intervention for somebody who is overweight or obese.

BMI: Classification of overweight and obesity in adults

Use BMI as a practical estimate of adiposity in adults. Interpret BMI with caution because it is not a direct measure of adiposity.

Think about using waist circumference, in addition to BMI, in people with a BMI less than 35 kg/m²

Do not use bioimpedance as a substitute for BMI as a measure of general adiposity

Classification	BMI (kg/m ²)
Healthy weight	18.5-24.9
Overweight	25-29.9
Obesity I	30-34.9
Obesity II	35-39.9
Obesity III	40 or more



Assessment of the health risks associated with being overweight or obese in adults

Give adults information about their classification of clinical obesity and the impact this has on risk factors for developing other long-term health problems.

BMI classification	Waist circumference		
	Low	High	Very High
Overweight	No increased risk	Increased risk	High risk
Obesity I	Increased risk	High risk	Very high risk

For men, waist circumference of <94 cm is low, 94–102 cm is high and >102 cm is very high.
For women, waist circumference of <80 cm is low, 80–88 cm is high and >88 cm is very high.

Level of intervention

Base the level of intervention to discuss with the patient initially as follows:

BMI classification	Waist circumference			Number of comorbidities
	Low	High	Very high	
Overweight	1	2	2	3
Obesity I	2	2	2	3
Obesity II	3	3	3	4
Obesity III	4	4	4	4

Key

- 1= general advice on healthy weight and lifestyle (can be provided regardless of specialty)
- 2=diet and physical activity (refer to specialist service or relevant profession)
- 3=diet and physical activity, consider drugs (refer to specialist service)
- 4=diet and physical activity, consider drugs, consider surgery (refer to specialist service)

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Health benefits of weight loss

Healthcare professionals should discuss the health benefits associated with sustained modest weight loss:

- improved lipid profiles
- reduced osteoarthritis-related disability
- lowered all cause cancer and diabetes mortality in some patient groups
- reduced blood pressure
- improved glycaemic control
- reduction in risk of type 2 diabetes
- potential for improved lung function in patients with asthma

Text based on:

[SIGN 115 Obesity](#)

[NICE CG189 Obesity: identification, assessment and management of overweight and obesity in children, young people and adults](#)

[NICE PH53 Managing overweight and obesity in adults – lifestyle weight management services](#)

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Weight management programmes

Individuals asking about weight management should be encouraged to be physically active and reduce sedentary behaviour, including television watching.

Healthcare professionals should discuss willingness to change with patients and then target weight loss interventions according to patient willingness around each component of behaviour required for weight loss, e.g. specific dietary and/or activity changes.

Overweight and obese individuals should be prescribed a volume of physical activity equal to approximately 1,800-2,500 kcal/week. This corresponds to approximately 225-300 min/week of moderate intensity physical activity (which may be achieved through five sessions of 45-60 minutes per week, or lesser amounts of vigorous physical activity).

Weight management programmes should include physical activity, dietary change and behavioural components. Healthcare professionals should be aware of the following options:

- the local obesity pathway and the local strategic approach to preventing and managing obesity
- the range of local lifestyle weight management services available
- national sources of accurate information and advice, such as NHS Choices and Change4life
- continuing professional development or training opportunities on weight management

Text based on:

[SIGN 115 Obesity](#)

[NICE CG189 Obesity: identification, assessment and management of overweight and obesity in children, young people and adults](#)

[NICE PH53 Managing overweight and obesity in adults – lifestyle weight management services](#)

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Obesity in children and young people

Clinical judgement should be used to when to measure a patient's height and weight. Consultations for a particular condition offer the ideal opportunity to measure somebody's BMI.

How is BMI measured in children and young people?

BMI (adjusted for age and gender: <http://www.rcpch.ac.uk/child-health/research-projects/uk-who-growth-charts/uk-growth-chart-resources-2-18-years/school-age>) should be used as a practical estimate of adiposity in children and young people. However, it should be interpreted with caution because it is not a direct measure of adiposity.

When should I refer for onwards treatment?

Refer children with a BMI at or above the 91st centile to a weight management service for a full assessment and tailored intervention.

What other treatment can I offer?

- encourage children and young people to increase their level of physical activity, even if they do not lose weight as a result, because of the other health benefits exercise can bring (for example, reduced risk of type 2 diabetes and cardiovascular disease)
- encourage children to do at least 60 minutes of moderate or greater intensity physical activity each day. The activity can be in 1 session or several sessions lasting 10 minutes or more
- be aware that children who are already overweight may need to do more than 60 minutes' activity
- encourage children to reduce inactive behaviours, such as sitting and watching television, using a computer or playing video games
- give children the opportunity and support to do more exercise in their daily lives (for example, walking, cycling, using the stairs and active play). Make the choice of activity with the child, and ensure it is appropriate to the child's ability and confidence
- give children the opportunity and support to do more regular, structured physical activity (for example football, swimming or dancing). Make the choice of activity with the child, and ensure it is appropriate to the child's ability and confidence

Text based on:

NICE CG189 [Obesity: identification, assessment and management of overweight and obesity in children, young people and adults](#)

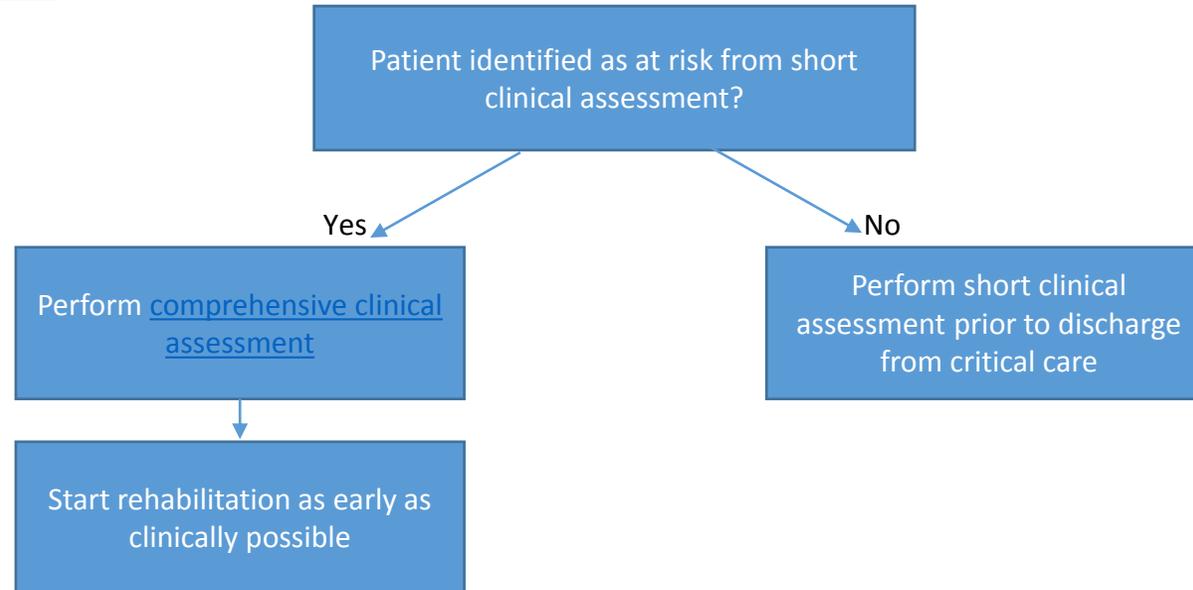
NICE PH47 [Managing overweight and obesity among children and young people: lifestyle weight management services](#)

SIGN 115 [Management of obesity](#)

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Rehabilitation after critical illness: Critical care

During the patient's critical care stay and as early as clinically possible, perform a [short clinical assessment to determine the patient's risk](#) of developing [physical and non-physical morbidity](#).



Rehabilitation should be based on the comprehensive clinical assessment and the rehabilitation goals. Rehabilitation should include:

- measures to prevent avoidable physical and non-physical morbidity
- an individualised, structured rehabilitation programme with frequent follow-up reviews

Give patients (and their family/carer unless the patient disagrees) the following information during their critical care stay:

- information about the patient's critical illness, interventions and treatments
- information about the equipment used during the patient's critical care stay
- information about any possible short-term and/or long-term physical and non-physical problems which may require rehabilitation

Deliver all the above information more than once during the patient's critical care stay.

Examples from the short clinical assessment that may indicate the patient is at risk of developing physical and non-physical morbidity

Physical	Non-physical
Unable to get out of bed independently.	Recurrent nightmares, particularly where patients report trying to stay awake to avoid nightmares.
Anticipated long duration of critical care stay.	Intrusive memories of traumatic events which have occurred prior to admission (for example, road traffic accidents) or during their critical care stay (for example, delusion experiences or flashbacks).
Obvious significant physical or neurological injury.	New and recurrent anxiety or panic attacks
Lack of cognitive functioning to continue exercise independently.	Expressing the wish not to talk about their illness or changing the subject quickly off the topic
Unable to self ventilate on 35% of oxygen or less.	
Presence of pre-morbid respiratory or mobility problems.	
Unable to mobilise independently over short distances.	

Symptoms from the functional assessment that may indicate the presence of physical and non-physical morbidity

Physical dimensions	
Physical problems	Weakness, inability/partial ability to sit, rise to standing, or to walk, fatigue, pain, breathlessness, swallowing difficulties, incontinence, inability/partial ability to self-care
Sensory problems	Changes in vision or hearing, pain, altered sensation.
Communication problems	Difficulties in speaking or using language to communicate, difficulties in writing.
Social care or equipment needs	Mobility aids, transport, housing, benefits, employment and leisure needs.

Non-physical dimensions	
Anxiety, depression and PTSD-related symptoms	New or recurrent somatic symptoms including palpitations, irritability and sweating; symptoms of derealisation and depersonalisation; avoidance behaviour; depressive symptoms including tearfulness and withdrawal; nightmares, delusions, hallucinations and flashbacks.
Behavioural and cognitive problems	Loss of memory, attention deficits, sequencing problems, deficits in organisational skills, confusion, apathy, disinhibition, compromised insight.
Other psychological or psychosocial problems	Low-self-esteem, poor or low self-image and/or body image issues, relationship difficulties, including those with the family and/or carer.

Comprehensive clinical assessment

The comprehensive clinical assessment should:

- include assessments by healthcare professionals experienced in critical care and rehabilitation
- physical, sensory and communication problems
- underlying factors, such as pre-existing psychological or psychiatric distress
- symptoms that have developed during the critical care stay, such as delusions, intrusive memories, anxiety, panic episodes, nightmares, flashback episodes or depression
- be used to agree short-term and medium-term rehabilitation goals
- inform the individualised, structured rehabilitation programme (with the patient's family/carer involved unless the patient disagrees)

The comprehensive clinical assessment, the rehabilitation goals, and the rehabilitation programme should be collated and documented in the patient's clinical records.

Cardiac rehabilitation

Who should attend?

All patients (regardless of their age) should be advised about and offered a cardiac rehabilitation programme with an exercise component

Patients should not be excluded from the entire programme if they choose not to attend certain components

If a patient has cardiac or other clinical conditions that may worsen during exercise, these should be treated if possible before the patient is offered the exercise component of cardiac rehabilitation. For some patients, the exercise component may be adapted by an appropriately qualified healthcare professional

Patients with left ventricular dysfunction who are stable can safely be offered the exercise component of cardiac rehabilitation

How should cardiac rehab programmes be conducted?

Take into account the patient's physical and psychological status, as well as the type of activity planned when offering advice about the timing of returning to normal activities

An estimate of the physical demand of a particular activity, and a comparison between activities, can be made using tables of metabolic equivalents (METS) of different activities (further information can be found on the [Centers for Disease Control and Prevention website](#))

Advise patients on how to use a perceived exertion scale to help monitor physiological demand
Patients who have had a complicated MI may need expert advice

Advice on competitive sport may need expert assessment of function and risk, and is dependent on what sport is being discussed and the level of competitiveness

A home-based programme validated for patients who have had an MI (such as [The Heart Manual](#)), can be offered

How to encourage people to attend?

Deliver cardiac rehabilitation in a non-judgemental, respectful and culturally sensitive manner. Consider employing bilingual peer educators or cardiac rehabilitation assistants

Discuss with the person any factors that might stop them attending a cardiac rehabilitation programme, such as transport difficulties

Offer cardiac rehabilitation programmes in a choice of venues (e.g. home, hospital and community) and at a choice of times of day, for example, sessions outside of working hours

Provide a range of different types of exercise, to meet the needs of people of all ages, or those with significant comorbidity

Offer single-sex cardiac rehabilitation programme classes if there is sufficient demand

Ensure that there are clear lines of responsibility for arranging the early initiation of cardiac rehabilitation

Encourage all staff, including senior medical staff, involved in providing care for people after an MI, to actively promote cardiac rehabilitation

Begin cardiac rehabilitation as soon as possible after admission and before discharge from hospital

Invite the person to a cardiac rehabilitation session which should start within 10 days of their discharge from hospital

Contact people who do not start or do not continue to attend the cardiac rehabilitation programme with a further reminder, such as:

- a motivational letter
- a prearranged visit from a member of the cardiac rehabilitation team
- a telephone call
- a combination of the above

Seek feedback from cardiac rehabilitation programme users and aim to use this feedback to increase the number of people starting and attending the programme

Make cardiac rehabilitation equally accessible and relevant to all people after an MI, particularly people from groups that are less likely to access this service

Glossary

AAA: Abdominal aortic aneurysm

ABG: Arterial blood gas

ACBT: Active cycle of breathing technique

AD: Autogenic drainage

ADLs: Activities of daily living

AOT: Ambulatory oxygen therapy

BMI: body mass index

CBG: Capillary blood gas

CF: Cystic fibrosis

COPD: Chronic obstructive pulmonary disease

CPAP: Continuous positive airway pressure

ED: Emergency Department

FET: Forced expiratory technique

FEV₁: Forced expiratory volume in 1 second

FVC: Forced vital capacity

IMT: Inspiratory muscle training

IPF: Idiopathic pulmonary fibrosis

IPPB: Intermittent positive pressure breathing

LTOT: Long term oxygen therapy

MI: Myocardial infarction

MI-E: Manual insufflator-exsufflator

MIP: Maximal inspiratory pressure

MRC: Medical Research Council

NIV: Non-invasive ventilation

NMES: Neuromuscular electrical stimulation

OT: Occupational therapy

PaCO₂: Partial pressure of arterial carbon dioxide

PaO₂: Partial pressure of arterial oxygen

PEF: Peak expiratory flow

PEP: Positive expiratory pressure

PTS: Post traumatic stress

PR: Pulmonary rehabilitation

SaO₂: Arterial oxygen saturation

SBOT: Short burst oxygen therapy

SNIP: Sniff nasal inspiratory pressure

SpO₂: Arterial oxygen saturation, measured by pulse oximeter

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