



Chronic obstructive pulmonary disease in adults

Quality standard

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This standard is based on NG115.

This standard should be read in conjunction with QS13, QS15, QS25, QS122, QS110 and QS207.

Quality statements

Statement 1 People aged over 35 years who present with a risk factor and one or more symptoms of chronic obstructive pulmonary disease (COPD) have post-bronchodilator spirometry. **[2011, updated 2016]**

Statement 2 People with COPD who are prescribed an inhaler have their inhaler technique assessed when starting treatment and then regularly during treatment. **[2011, updated 2016]**

Statement 3 People with stable COPD and a persistent resting stable oxygen saturation level of 92% or less have their arterial blood gases measured to assess whether they need long-term oxygen therapy. **[2011, updated 2016]**

Statement 4 People with stable COPD and exercise limitation due to breathlessness are referred to a pulmonary rehabilitation programme. **[2011, updated 2016]**

Statement 5 People admitted to hospital for an acute exacerbation of COPD start a pulmonary rehabilitation programme within 4 weeks of discharge. **[2011, updated 2016]**

Statement 6 People receiving emergency oxygen for an acute exacerbation of COPD have oxygen saturation levels maintained between 88% and 92%. **[new 2016]**

Statement 7 People with an acute exacerbation of COPD and persistent acidotic hypercapnic ventilatory failure that is not improving after 1 hour of optimal medical therapy have non-invasive ventilation. **[2011, updated 2016]**

Statement 8 (Placeholder) Hospital discharge care bundle. **[new 2016]**

In 2016 this quality standard was updated, and statements prioritised in 2011 were updated (2011, updated 2016) or replaced (new 2016). For more information, see [update](#)

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information.

The 2011 quality standard for COPD is available as a pdf.

Quality statement 1: Diagnosis with spirometry

Quality statement

People aged over 35 years who present with a risk factor and one or more symptoms of chronic obstructive pulmonary disease (COPD) have post-bronchodilator spirometry. [2011, updated 2016]

Rationale

A diagnosis of COPD is confirmed by post-bronchodilator spirometry. To ensure early diagnosis, spirometry should be done in primary care when a person presents with a risk factor for COPD (which is usually smoking) and one or more symptoms of COPD.

Quality measures

Structure

a) Evidence of local arrangements and written clinical protocols to ensure that people aged over 35 years presenting with a risk factor and one or more symptoms of COPD have post-bronchodilator spirometry.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

b) Evidence of local arrangements and written clinical protocols to ensure that healthcare professionals in primary care using post-bronchodilator spirometry are trained and competent in its use.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

c) Evidence of local arrangements to ensure that primary care services providing

post-bronchodilator spirometry are supported by quality control processes.

Data source: Local data collection.

Process

Proportion of people aged over 35 years presenting with a risk factor and one or more symptoms of COPD who have post-bronchodilator spirometry.

Numerator – the number in the denominator who have post-bronchodilator spirometry.

Denominator – the number of people aged over 35 years presenting with a risk factor and one or more symptoms of COPD.

Data source: Local data collection. Quality and Outcomes Framework indicator COPD002: The percentage of patients with COPD in whom the diagnosis has been confirmed by post-bronchodilator spirometry between 3 months before and 12 months after entering on to the register.

Outcome

COPD incidence.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme.

What the quality statement means for different audiences

Service providers (primary care services) ensure that quality-assured post-bronchodilator spirometry is carried out in people aged 35 years and over who have a risk factor and one or more symptoms of COPD, to confirm diagnosis of COPD. Service providers ensure that healthcare professionals are trained and competent in performing and interpreting post-bronchodilator spirometry.

Healthcare professionals (in primary care services) ensure that they perform quality-assured post-bronchodilator spirometry in people aged 35 years and over who

have a risk factor and one or more symptoms of COPD, to confirm diagnosis of COPD. Healthcare professionals ensure they remain up to date with training and competencies in performing and interpreting post-bronchodilator spirometry.

Commissioners (clinical commissioning groups) ensure that they commission services in which people aged 35 years and over who present with a risk factor and one or more symptoms of COPD receive quality-assured post-bronchodilator spirometry to confirm a diagnosis of COPD.

People aged 35 or older who have an increased risk of COPD and who have one or more symptoms of COPD are offered a test to check how well their lungs work (called post-bronchodilator spirometry). This test is used to diagnose COPD. People are at an increased risk of COPD if they smoke or have smoked in the past, or if they have been exposed to harmful fumes, dust or chemicals, often at work. Symptoms of COPD include breathlessness, long-lasting cough, coughing up phlegm, frequent winter 'bronchitis' and wheezing.

Source guidance

[Chronic obstructive pulmonary disease in over 16s: diagnosis and management. NICE guideline NG115](#) (2018, updated 2019), recommendations 1.1.1, 1.1.5, 1.1.8 and 1.1.10

Definitions of terms used in this quality statement

Risk factors

Risk factors for COPD include:

- smoking history
- occupational exposure to harmful fumes, dust or chemicals
- exposure to fumes, such as biomass fuels.

[[NICE's guideline on chronic obstructive pulmonary disease](#) and expert opinion]

Symptoms of COPD

Symptoms of COPD are:

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

[[NICE's guideline on chronic obstructive pulmonary disease](#), recommendation 1.1.1]

Post-bronchodilator spirometry

Post-bronchodilator spirometry is used to identify abnormalities in lung volumes and air flow. Spirometry should be performed by a healthcare professional who has had appropriate training and who has up-to-date skills. The use of post-bronchodilator spirometry should be supported by quality control processes. [Adapted from [NICE's guideline on chronic obstructive pulmonary disease](#), recommendations 1.1.9 and 1.1.10]

Quality statement 2: Inhaler technique

Quality statement

People with chronic obstructive pulmonary disease (COPD) who are prescribed an inhaler have their inhaler technique assessed when starting treatment and then regularly during treatment. [2011, updated 2016]

Rationale

Bronchodilator therapy is usually delivered using a hand-held inhaler device. People with COPD need to use their inhaler correctly to receive the optimal treatment dose. Assessing inhaler technique should happen at the first prescription once a person has been taught the correct technique, and then be reassessed regularly (for example, at their annual review, if their treatment changes or after an acute exacerbation) throughout the duration of a person's treatment in primary, community and secondary care services.

Quality measures

Structure

a) Evidence of local arrangements and written clinical protocols to ensure that people with COPD who are prescribed an inhaler have their technique assessed at the start of treatment and then regularly during their treatment.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

b) Evidence of local arrangements and written clinical protocols to ensure that healthcare professionals in primary, community and secondary care services are trained and competent in teaching inhaler technique.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

Process

a) Proportion of people with COPD prescribed an inhaler who have their inhaler technique assessed at the start of treatment.

Numerator – the number in the denominator who have their inhaler technique assessed at the start of treatment.

Denominator – the number of people with COPD prescribed an inhaler.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

b) Proportion of people with COPD prescribed an inhaler who have their inhaler technique assessed at their annual review.

Numerator – the number in the denominator whose last inhaler annual review was no longer than 12 months since the previous one or since inhaler initiation.

Denominator – the number of people with COPD prescribed an inhaler for more than 12 months.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

c) Proportion of people with COPD prescribed an inhaler who have their inhaler technique assessed after a change in treatment.

Numerator – the number in the denominator who had their inhaler technique assessed after a change in treatment.

Denominator – the number of people with COPD prescribed an inhaler who have had their inhaler changed.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

d) Proportion of people with COPD prescribed an inhaler who have their inhaler technique

assessed after an acute exacerbation.

Numerator – the number in the denominator who had their inhaler technique assessed after an acute exacerbation.

Denominator – the number of people with COPD prescribed an inhaler who have had an acute exacerbation.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

Outcomes

a) Exacerbation rates.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

b) Hospital admissions.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

What the quality statement means for different audiences

Service providers (primary care services, community services and secondary care services) ensure that systems are in place and healthcare professionals are trained and competent to teach people with COPD who are prescribed an inhaler the correct inhaler technique and to assess their inhaler technique when starting treatment and regularly during their treatment.

Healthcare professionals (nurses, GPs, secondary care doctors, physiotherapists, occupational therapists and pharmacists) ensure that they provide training in the correct inhaler technique to people with COPD when they have been prescribed an inhaler. Healthcare professionals ensure that they assess the person's inhaler technique when starting treatment and regularly during their treatment.

Commissioners (clinical commissioning groups) ensure that they commission services in which people with COPD who are prescribed an inhaler are trained and assessed in the correct inhaler technique when they start treatment, and have their technique reassessed regularly during their treatment.

People with COPD who are given an inhaler have a check to make sure that they can use it correctly when they start treatment and at least once a year at their annual review. They should also have a check if their treatment changes or after a sudden flare up of their symptoms (called an acute exacerbation).

Source guidance

[Chronic obstructive pulmonary disease in over 16s: diagnosis and management. NICE guideline NG115 \(2018, updated 2019\), recommendations 1.2.24, 1.2.25 and 1.3.45](#)

Equality and diversity considerations

Elderly people, or people with learning disabilities, physical disabilities or cognitive impairment may experience difficulties learning and retaining the adequate inhaler technique to ensure that they get the optimal treatment dose. An individual patient assessment should be carried out before choosing the most appropriate device for delivery of inhaled therapy.

Quality statement 3: Assessment for long-term oxygen therapy

Quality statement

People with stable chronic obstructive pulmonary disease (COPD) and a persistent resting stable oxygen saturation level of 92% or less have their arterial blood gases measured to assess whether they need long-term oxygen therapy (LTOT). **[2011, updated 2016]**

Rationale

LTOT is used to treat people with stable COPD who have developed daytime hypoxaemia. People with COPD and a persistent resting stable oxygen saturation of 92% or less should be assessed for their suitability for LTOT, which can improve survival, pulmonary haemodynamics, polycythaemia and neuropsychological health.

Quality measures

Structure

Evidence of local arrangements and written clinical protocols to ensure that people with stable COPD and a persistent resting stable oxygen saturation level of 92% or less have their arterial blood gases measured to assess whether they need LTOT.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

Process

Proportion of people with stable COPD and a persistent resting stable oxygen saturation level of 92% or less who have their arterial blood gases measured to assess whether they need LTOT.

Numerator – the number in the denominator who have their arterial blood gases measured to assess whether they need LTOT.

Denominator – the number of people with stable COPD and a persistent resting stable oxygen saturation level of 92% or less.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

Outcomes

a) Hospital admission for acute exacerbation.

Data source: Local data collection.

b) Quality of life.

Data source: Local data collection.

What the quality statement means for different audiences

Service providers (primary and secondary care services) ensure that systems are in place for people with stable COPD and a persistent resting oxygen saturation level of 92% or less to have their arterial blood gases measured to assess whether they need LTOT.

Healthcare professionals ensure that they measure the arterial blood gases of people with stable COPD and a persisting resting oxygen saturation level of 92% or less to assess whether they need LTOT.

Commissioners (clinical commissioning groups) ensure that they commission services in which people with stable COPD and a persisting resting oxygen saturation level of 92% or less have their arterial blood gases measured to assess whether they need LTOT.

People with COPD that is stable and who have low levels of oxygen in their blood (when checked using a device that clips to their finger) have this confirmed by a blood test, to assess whether they need long-term oxygen therapy. Long-term oxygen therapy is

treatment with oxygen breathed in through a tube (placed just inside the nose) or a mask connected to an oxygen supply. It is usually given for at least 15 hours during the day or night.

Source guidance

- [Chronic obstructive pulmonary disease in over 16s: diagnosis and management. NICE guideline NG115 \(2018, updated 2019\), recommendation 1.2.57](#)
- [British Thoracic Society. Guidelines for home oxygen use in adults \(2015\), Referral and assessment of patients for LTOT, page i11, bullet point 5](#)

Definitions

Long-term oxygen therapy (LTOT)

The provision of oxygen therapy for continuous use at home, usually given for at least 15 hours during the day or night. [Adapted from [NICE's guideline on chronic obstructive pulmonary disease](#)]

Assessment for LTOT

Assessing people for LTOT should comprise measuring arterial blood gases on 2 occasions at least 3 weeks apart in people who have a confident diagnosis of COPD, who are receiving optimum medical management and whose COPD is stable. [[NICE's guideline on chronic obstructive pulmonary disease](#), recommendation 1.2.57]

Stable COPD

The absence of any of the features of a recent acute exacerbation, such as worsening breathlessness, cough, increased sputum production and change in colour of sputum. [[NICE's guideline on chronic obstructive pulmonary disease](#), section 1.2]

Persistent resting stable oxygen saturation

An oxygen saturation (measured with a pulse oximeter) that is persistently 92% or less when the person is in a chronic stable state and is at rest (is not, and has not recently,

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been exercising).

Be aware that some pulse oximeters can underestimate or overestimate oxygen saturation levels, especially if the saturation level is borderline. Overestimation has been reported in people with dark skin. See also the [NHS England Patient Safety Alert on the risk of harm from inappropriate placement of pulse oximeter probes](#). [[NICE's guideline on chronic obstructive pulmonary disease](#), recommendation 1.2.57 and expert opinion]

Quality statement 4: Pulmonary rehabilitation for stable COPD and exercise limitation

Quality statement

People with stable chronic obstructive pulmonary disease (COPD) and exercise limitation due to breathlessness are referred to a pulmonary rehabilitation programme. [2011, updated 2016]

Rationale

Pulmonary rehabilitation programmes improve a person's exercise capacity, quality of life, symptoms and levels of anxiety and depression.

Quality measures

Structure

Evidence of local arrangements and written clinical protocols to ensure that people with stable COPD and exercise limitation due to breathlessness are referred to a pulmonary rehabilitation programme.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme: pulmonary rehabilitation clinical audit and organisational audit.

Process

a) Proportion of people with stable COPD and exercise limitation due to breathlessness who are referred to a pulmonary rehabilitation programme.

Numerator – the number in the denominator who are referred to a pulmonary rehabilitation programme.

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Denominator – the number of people with stable COPD and exercise limitation due to breathlessness.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme: pulmonary rehabilitation clinical audit.

b) Proportion of referrals of people with stable COPD and exercise limitation due to breathlessness that result in the person attending a pulmonary rehabilitation programme.

Numerator – the number in the denominator that result in the person attending a pulmonary rehabilitation programme.

Denominator – the number of referrals of people with stable COPD and exercise limitation due to breathlessness to pulmonary rehabilitation programmes.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme: pulmonary rehabilitation clinical audit.

c) Proportion of attendances of people with stable COPD and exercise limitation due to breathlessness that result in the person completing a pulmonary rehabilitation programme.

Numerator – the number in the denominator that result in the person completing a pulmonary rehabilitation programme.

Denominator – the number of attendances of people with stable COPD and exercise limitation due to breathlessness at pulmonary rehabilitation programmes.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme: pulmonary rehabilitation clinical audit.

Outcomes

a) Hospital admissions for acute exacerbation.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme.

b) Quality of life.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme.

c) Exercise capacity.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme: Pulmonary rehabilitation clinical audit.

d) GP attendances.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme.

What the quality statement means for different audiences

Service providers (secondary care and community services) ensure that systems are in place for people with stable COPD and exercise limitation due to breathlessness to be referred to a pulmonary rehabilitation programme.

Healthcare professionals refer people with stable COPD and exercise limitation due to breathlessness are referred to a pulmonary rehabilitation programme.

Commissioners (clinical commissioning groups) ensure that they commission services in which people with stable COPD and exercise limitation due to breathlessness are referred to a pulmonary rehabilitation programme.

People with COPD that is stable and who have difficulty walking and have to walk slowly and stop often or soon become breathless, are referred to a pulmonary rehabilitation programme. This includes exercises, information about COPD, diet advice and support depending on the person's needs.

Source guidance

Chronic obstructive pulmonary disease in over 16s: diagnosis and management. NICE guideline NG115 (2018, updated 2019), recommendations 1.2.81 and 1.2.82

Definitions of terms used in this quality statement

Exercise limitation

Medical Research Council dyspnoea scale of breathlessness grade 3 and above. A breathlessness of grade 3 is defined as 'walks slower than contemporaries on level ground because of breathlessness, or has to stop for breath when walking at own pace'. [[NICE's guideline on chronic obstructive pulmonary disease, recommendation 1.1.3](#)]

Pulmonary rehabilitation programme

A multidisciplinary programme of care for people with chronic respiratory impairment that is individually tailored and designed to optimise each person's physical and social performance and autonomy. [[NICE's guideline on chronic obstructive pulmonary disease, recommendation 1.2.84](#), and [British Thoracic Society's guideline on pulmonary rehabilitation in adults](#)]

Pulmonary rehabilitation programmes should be held at times that suit people with COPD and in locations that are easy for people with COPD to get to, and have good access for people with disabilities. Programmes should be available within a reasonable time from referral. [Adapted from [NICE's guideline on chronic obstructive pulmonary disease, recommendation 1.2.83](#)]

Programmes comprise individualised exercise programmes and education, and:

- are at least 6 weeks in duration and include a minimum of twice-weekly supervised sessions
- include supervised, individually tailored and prescribed, progressive exercise training including both aerobic and resistance training
- include a defined, structured education programme.

[[British Thoracic Society's guideline on pulmonary rehabilitation in adults](#)]

Equality and diversity considerations

Pulmonary rehabilitation is not suitable for people with unstable cardiac disease,

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locomotor or neurological difficulties precluding exercise such as severe arthritis or peripheral vascular disease, and people in a terminal phase of an illness or with significant cognitive or psychiatric impairment.

Quality statement 5: Pulmonary rehabilitation after an acute exacerbation

Quality statement

People admitted to hospital for an acute exacerbation of chronic obstructive pulmonary disease (COPD) start a pulmonary rehabilitation programme within 4 weeks of discharge. [2011, updated 2016]

Rationale

Starting a pulmonary rehabilitation programme within 4 weeks of hospital discharge after an acute exacerbation reduces the short-term risk of hospital readmission, and improves the quality of life and the short-term exercise capacity of people with COPD.

Quality measures

Structure

Evidence of local arrangements and written clinical protocols to ensure that people with COPD admitted to hospital for an acute exacerbation start a pulmonary rehabilitation programme within 4 weeks of discharge.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme: pulmonary rehabilitation clinical audit and organisational audit.

Process

Proportion of people discharged from hospital after an acute exacerbation of COPD who start a pulmonary rehabilitation programme within 4 weeks of discharge.

Numerator – the number in the denominator who start a pulmonary rehabilitation programme within 4 weeks of discharge.

Denominator – the number of people discharged from hospital after an acute exacerbation of COPD.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme: pulmonary rehabilitation clinical audit.

Outcomes

a) Hospital admissions for acute exacerbations.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme.

b) Quality of life.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme.

c) Exercise capacity.

Data source: Local data collection. Royal College of Physicians' National COPD Audit Programme: pulmonary rehabilitation clinical audit.

What the quality statement means for different audiences

Service providers (secondary care and community services) ensure that systems are in place for people admitted to hospital for an acute exacerbation of COPD to start a pulmonary rehabilitation programme within 4 weeks of discharge.

Healthcare professionals ensure that people admitted to hospital for an acute exacerbation of COPD are referred for and receive a pulmonary rehabilitation programme within 4 weeks of discharge.

Commissioners (clinical commissioning groups) ensure that they commission services in which people who are admitted to hospital for an acute exacerbation of COPD are referred for and receive a pulmonary rehabilitation programme within 4 weeks of discharge.

People with COPD who have had a hospital stay because of a sudden flare up of their symptoms (called an acute exacerbation) start a pulmonary rehabilitation programme within 4 weeks of leaving hospital. This includes exercises, information about COPD, diet advice and support depending on the person's needs.

Source guidance

- [Chronic obstructive pulmonary disease in over 16s: diagnosis and management. NICE guideline NG115 \(2018, updated 2019\), recommendation 1.2.82](#)
- [British Thoracic Society. Guideline on pulmonary rehabilitation in adults \(2013\), Post-exacerbation pulmonary rehabilitation page ii15, paragraph 6](#)

Definitions of terms used in this quality statement

Acute exacerbation

An exacerbation is a sustained worsening of a person's symptoms from their usual stable state and which is beyond usual day-to-day variations and acute in onset. Commonly reported symptoms are: worsening breathlessness, cough, increased sputum production and change in sputum colour. [Adapted from [NICE's guideline on chronic obstructive pulmonary disease](#)]

Exercise capacity and physical activity levels are impaired during and after an exacerbation, contributing to skeletal muscle dysfunction, particularly of the lower limbs. [Adapted from [British Thoracic Society's guideline on pulmonary rehabilitation in adults](#)]

Pulmonary rehabilitation programme

A multidisciplinary programme of care for people with chronic respiratory impairment that is individually tailored and designed to optimise each person's physical and social performance and autonomy. [[NICE's guideline on chronic obstructive pulmonary disease, recommendation 1.2.84](#), and [British Thoracic Society's guideline for pulmonary rehabilitation in adults](#)]

Pulmonary rehabilitation programmes should be held at times that suit people with COPD and in locations that are easy for people with COPD to get to, and have good access for

people with disabilities. Programmes should be available within a reasonable time from referral. [Adapted from [NICE's guideline on chronic obstructive pulmonary disease](#), recommendation 1.2.83]

Programmes comprise individualised exercise programmes and education, and:

- are at least 6 weeks in duration and include a minimum of twice-weekly supervised sessions
- include supervised, individually tailored and prescribed, progressive exercise training including both aerobic and resistance training
- include a defined, structured education programme.

[[British Thoracic Society's guideline on pulmonary rehabilitation in adults](#)]

Equality and diversity considerations

Pulmonary rehabilitation is not suitable for people with unstable cardiac disease, locomotor or neurological difficulties precluding exercise such as severe arthritis or peripheral vascular disease, and people in a terminal phase of an illness or with significant cognitive or psychiatric impairment.

Some people with COPD may not be well enough to attend a pulmonary rehabilitation programme within 4 weeks of an acute exacerbation, may not have attended hospital after an acute exacerbation of COPD or may not have been admitted to hospital after their exacerbation of COPD.

Quality statement 6: Emergency oxygen during an exacerbation

Quality statement

People receiving emergency oxygen for an acute exacerbation of chronic obstructive pulmonary disease (COPD) have their oxygen saturation levels maintained between 88% and 92%. **[new 2016]**

Rationale

During an exacerbation, people with COPD may experience a worsening of gas exchange in the lungs, which can lead to low blood oxygen levels. Emergency oxygen is often given during the treatment of an exacerbation, either in the community, during transfer to hospital in an ambulance or while being assessed at hospital.

In some people, uncontrolled oxygen therapy may reduce the depth and frequency of breathing, leading to a rise in blood carbon dioxide levels and a fall in the blood pH (acidosis). Controlled oxygen therapy must therefore be administered by a delivery device and at a flow rate that helps the oxygen saturation to be maintained between 88% and 92%.

Be aware that some pulse oximeters can underestimate or overestimate oxygen saturation levels, especially if the saturation level is borderline. Overestimation has been reported in people with dark skin. See also the [NHS England Patient Safety Alert on the risk of harm from inappropriate placement of pulse oximeter probes](#).

Quality measures

Structure

Evidence of local arrangements and written clinical protocols to ensure that people receiving emergency oxygen for an acute exacerbation of COPD have their oxygen saturation levels maintained between 88% and 92%.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

Process

Proportion of people receiving emergency oxygen for an acute exacerbation of COPD who have their oxygen saturation levels maintained between 88% and 92%.

Numerator – the number in the denominator whose oxygen saturation levels are maintained between 88% and 92%.

Denominator – the number of people with an acute exacerbation of COPD receiving emergency oxygen.

Outcomes

a) Frequency of non-invasive ventilation due to oxygen toxicity.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

b) Morbidity rates.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

What the quality statement means for different audiences

Service providers (community and secondary care services, ambulance trusts, A&E departments) ensure that devices and flow rates are used to enable oxygen saturation levels to be maintained between 88% and 92% in people receiving emergency oxygen for an acute exacerbation of COPD.

Healthcare professionals ensure that devices and flow rates are used to enable oxygen saturation levels to be maintained between 88% and 92% in people receiving emergency oxygen for an acute exacerbation of COPD.

Commissioners ensure that they commission services that use devices and flow rates to enable oxygen saturation levels to be maintained between 88% and 92% in people receiving emergency oxygen for an acute exacerbation of COPD.

People with COPD who need emergency oxygen because of a sudden flare up of their symptoms (called an acute exacerbation) receive the correct amount of oxygen to keep the oxygen levels in their blood at a safe level.

Source guidance

[Chronic obstructive pulmonary disease in over 16s: diagnosis and management. NICE guideline NG115 \(2018, updated 2019\), recommendation 1.3.30](#)

Definition of terms used in this quality statement

Acute exacerbation

An exacerbation is a sustained worsening of a person's symptoms from their stable state beyond usual day-to-day variations and is acute in onset. Commonly reported symptoms are: worsening breathlessness, cough, increased sputum production and change in the colour of the sputum. [Adapted from [NICE's guideline on chronic obstructive pulmonary disease](#)]

Quality statement 7: Non-invasive ventilation

Quality statement

People with an acute exacerbation of chronic obstructive pulmonary disease (COPD) and persistent acidotic hypercapnic ventilatory failure that is not improving after 1 hour of optimal medical therapy have non-invasive ventilation. **[2011, updated 2016]**

Rationale

Non-invasive ventilation is used to treat persistent hypercapnic ventilatory failure and acidosis during an exacerbation of COPD, when a person's arterial blood gases (especially the pH and carbon dioxide levels) are not responding (or worsening) despite optimal medical management. Non-invasive ventilation should be delivered in a dedicated setting by staff trained and experienced in its use because of safety concerns with using the equipment.

Quality measures

Structure

Evidence of local arrangements to ensure that people with an acute exacerbation of COPD and persistent acidotic hypercapnic ventilatory failure that is not improving after 1 hour of optimal medical treatment have non-invasive ventilation.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

Process

Proportion of people with an exacerbation of COPD and persistent acidotic hypercapnic ventilatory failure that is not improving after 1 hour of optimal medical treatment who have

non-invasive ventilation.

Numerator – the number in the denominator who have non-invasive ventilation.

Denominator – the number of people with an acute exacerbation of COPD and persistent acidotic hypercapnic ventilatory failure that is not improving after 1 hour of optimal medical therapy.

Outcome

Mortality rates.

Data source: Local data collection. [Royal College of Physicians' National COPD Audit Programme](#).

What the quality statement means for different audiences

Service providers (secondary care services and A&E departments) ensure that people with an acute exacerbation of COPD and persistent acidotic hypercapnic ventilatory failure that is not improving after 1 hour of optimal medical treatment have non-invasive ventilation.

Healthcare professionals ensure that people with an acute exacerbation of COPD and persistent acidotic hypercapnic ventilatory failure that is not improving after 1 hour of optimal medical treatment have non-invasive ventilation. Healthcare professionals are trained and experienced in using non-invasive ventilation.

Commissioners (clinical commissioning groups) ensure that they commission services in which people with an acute exacerbation of COPD and persistent acidotic hypercapnic ventilatory failure that is not improving after 1 hour of optimal medical treatment have non-invasive ventilation.

People with COPD who have 'ventilatory failure' during a sudden flare up of their symptoms (called an acute exacerbation) are given an emergency treatment called non-invasive ventilation if they do not improve after 1 hour of treatment with medicine and oxygen. Ventilatory failure happens when a person can't breathe deeply enough and waste

carbon dioxide builds up in the blood causing acid to form. Non-invasive ventilation involves wearing a mask connected to a machine that pumps oxygen into the lungs.

Source guidance

[Chronic obstructive pulmonary disease in over 16s: diagnosis and management. NICE guideline NG115 \(2018, updated 2019\), recommendation 1.3.33](#)

Definitions of terms used in this quality statement

Acute exacerbation

An acute exacerbation is a sustained worsening of a person's symptoms from their stable state, and which is beyond usual day-to-day variations and acute in onset. Commonly reported symptoms are worsening breathlessness, cough, increased sputum production and change in sputum colour. [Adapted from [NICE's guideline on chronic obstructive pulmonary disease](#)]

Persistent acidotic hypercapnic ventilatory failure

Acute acidotic hypercapnic respiratory failure results from an inability of the respiratory system to provide sufficient alveolar ventilation to maintain a normal arterial PCO₂ and blood pH level. Co-existent hypoxaemia is usually mild and easily corrected. Conventionally, a pH <7.35 and a PCO₂ >6.5 kPa, persisting after initial medical therapy, define acute respiratory acidosis and have been used as threshold values for considering the use of non-invasive ventilation. More severe degrees of acidosis, such as pH <7.25, have been used as a threshold for considering provision of invasive mechanical ventilation. [Adapted from [NICE's guideline on chronic obstructive pulmonary disease and expert consensus](#)]

Non-invasive ventilation

Non-invasive ventilation is a method of providing ventilatory support that does not require an endotracheal tube. It is usually delivered through a mask that covers the nose or a mask covering the nose and the mouth. [[NICE's guideline on chronic obstructive pulmonary disease](#)]

Non-invasive ventilation should be given once it is recognised that a person is not responding to 1 hour of optimal medical therapy. [Expert consensus]

Optimal medical treatment

Controlled oxygen therapy, nebulised bronchodilator therapy, systemic corticosteroids and antibiotics if indicated, in line with the NICE guideline. [[NICE's guideline on chronic obstructive pulmonary disease](#)]

Quality statement 8 (placeholder): Hospital discharge care bundle

What is a placeholder statement?

A placeholder statement is an area of care that has been prioritised by the Quality Standards Advisory Committee but for which no source guidance is currently available. A placeholder statement indicates the need for evidence-based guidance to be developed in this area.

Rationale

Hospital discharge care bundles are designed to ensure that every person leaving hospital receives the best care. They emphasise the key interventions in the management pathway, including details of settings for care and treatment. There are several elements of ongoing care that an adult with COPD should start before discharge from hospital, which can improve their outcome. There is currently a lack of evidence-based guidance about the details that should be included in these care bundles. **[new 2016]**

Update information

February 2016: This quality standard was updated and statements prioritised in 2011 were replaced.

Statements are marked as **[new 2016]** or **[2011, updated 2016]**:

- **[new 2016]** if the statement covers a new area for quality improvement
- **[2011, updated 2016]** if the statement covers an area for quality improvement included in the 2011 quality standard and has been updated.

Statements numbered 1, 3, 6, 8 and 11 in the 2011 version have been updated and included in the updated quality standard, marked as **[2011, updated 2016]**.

The [2011 quality standard for COPD](#) is available as a pdf.

Minor changes since publication

March 2023: We added text to the definitions section of statement 3 and the rationale of statement 6 to indicate that pulse oximetry may be less reliable in people with dark skin. We also added a link to the NHS patient safety alert on the risk of harm from inappropriate placement of pulse oximeter probes.

August 2019: Source guidance references have been updated to align this quality standard with the updated 2019 [NICE guideline on chronic obstructive pulmonary disease](#).

December 2018: Source guidance references have been updated to align this quality standard with the updated 2018 NICE guideline on chronic obstructive pulmonary disease.

About this quality standard

NICE quality standards describe high-priority areas for quality improvement in a defined care or service area. Each standard consists of a prioritised set of specific, concise and measurable statements. NICE quality standards draw on existing NICE or NICE-accredited guidance that provides an underpinning, comprehensive set of recommendations, and are designed to support the measurement of improvement.

Expected levels of achievement for quality measures are not specified. Quality standards are intended to drive up the quality of care, and so achievement levels of 100% should be aspired to (or 0% if the quality statement states that something should not be done). However, this may not always be appropriate in practice. Taking account of safety, shared decision-making, choice and professional judgement, desired levels of achievement should be defined locally.

Information about [how NICE quality standards are developed](#) is available from the NICE website.

See our [webpage on quality standards advisory committees](#) for details about our standing committees. Information about the topic experts invited to join the standing members is available from the [webpage for this quality standard](#).

NICE has produced a [quality standard service improvement template](#) to help providers make an initial assessment of their service compared with a selection of quality statements. This tool is updated monthly to include new quality standards.

NICE guidance and quality standards apply in England and Wales. Decisions on how they apply in Scotland and Northern Ireland are made by the Scottish government and Northern Ireland Executive. NICE quality standards may include references to organisations or people responsible for commissioning or providing care that may be relevant only to England.

Diversity, equality and language

Equality issues were considered during development and [equality assessments for this quality standard](#) are available. Any specific issues identified during development of the

quality statements are highlighted in each statement.

Commissioners and providers should aim to achieve the quality standard in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity and foster good relations. Nothing in this quality standard should be interpreted in a way that would be inconsistent with compliance with those duties.

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Endorsing organisation

This quality standard has been endorsed by NHS England, as required by the Health and Social Care Act (2012)

Supporting organisations

Many organisations share NICE's commitment to quality improvement using evidence-based guidance. The following supporting organisations have recognised the benefit of the quality standard in improving care for patients, carers, service users and members of the public. They have agreed to work with NICE to ensure that those commissioning or providing services are made aware of and encouraged to use the quality standard.

- [Society for Acute Medicine \(SAM\)](#)
- [Chartered Society of Physiotherapy](#)
- [Primary Care Respiratory Society](#)
- [British Thoracic Society](#)
- [Royal College of General Practitioners \(RCGP\)](#)