



Royal College
of Physicians

NACAP

National Asthma and Chronic Obstructive
Pulmonary Disease Audit Programme (NACAP)

Pulmonary rehabilitation clinical and organisational audits 2019

Clinical (patients assessed for PR between June and November 2019)
and organisational audits of pulmonary rehabilitation services in
England, Scotland and Wales 2019.

Pulmonary rehabilitation 2019 audit report

Published December 2020



In association with:

Commissioned by:



The Royal College of Physicians

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National Asthma and Chronic Obstructive Pulmonary Disease (COPD) Audit Programme

NACAP is a programme of work that aims to improve the quality of care, services and clinical outcomes for patients with asthma and COPD in England, Scotland and Wales. Spanning the entire patient care pathway, NACAP includes strong collaboration with asthma and COPD patients, as well as healthcare professionals, and aspires to set out a vision for a service which puts patient needs first. To find out more about the NACAP visit: www.rcplondon.ac.uk/nacap.

Pulmonary rehabilitation: clinical and organisational audit report 2019

This report was prepared by the following people, on behalf of the COPD advisory group. The full list of members can be found on the NACAP resources page here: www.rcplondon.ac.uk/nacap-resources.

Prof Sally Singh, pulmonary rehabilitation clinical lead, NACAP, Care Quality Improvement Department (CQID), RCP; and head of pulmonary/cardiac rehabilitation and consultant clinical scientist, University Hospitals of Leicester

Ms Susan Latchem, programme manager, NACAP, CQID, RCP

Ms Rachael Andrews, deputy programme manager, NACAP, CQID, RCP

Ms Neena Garnavos, project manager, Pulmonary Rehabilitation Services Accreditation Programme (PRSAS), CQID, RCP

Ms Natasha Long, programme coordinator, NACAP, CQID, RCP

Mr Philip Stone, research assistant in statistics/epidemiology, National Heart & Lung Institute, Imperial College London

Mr Alex Adamson, research assistant in medical statistics, National Heart & Lung Institute, Imperial College London

Professor Jennifer Quint, professor of respiratory epidemiology, National Heart & Lung Institute, Imperial College London; honorary respiratory consultant, Royal Brompton and Imperial NHS trusts

Professor C Michael Roberts, senior clinical lead, NACAP, CQID, RCP; managing director of academic science partnership, UCLPartners, professor in medical education for clinical practice, Institute of Population Health Sciences, Queen Mary University London and deputy director of NIHR North Thames Applied Research Collaboration.

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Royal College of Physicians

Care Quality Improvement Department

11 St Andrews Place, Regent's Park, London NW1 4LE

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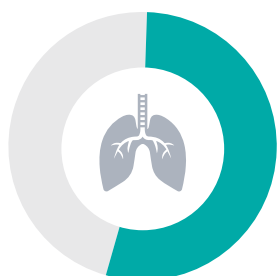
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Report at a glance

Access to pulmonary rehabilitation (PR)

Start date of PR



54%

of patients with stable COPD referred for pulmonary rehabilitation (PR) started PR within 90 days of referral.

National QI priority*

Ensure

85%



of patients with stable COPD referred for PR start it within 90 days of receipt of referral.

Quality of pulmonary rehabilitation (PR) services

Practice walk tests

Of those completing an incremental shuttle walk test (ISWT) or 6-minute walk test (6MWT) at initial assessment:



47% of patients **performed** a practice walk test.

National QI priority*

Ensure all walk tests are performed to accepted technical standards and all patients undertake a practice walk test at their initial PR assessment.



Technical standards



Only **13%** of PR services are meeting the technical standards for conducting the 6MWT along a 30-metre course.

Standard Operating Procedure (SOP)

National QI priority*

Ensure all PR services have an agreed SOP.



84% of PR services have an SOP.

* All national QI priorities align with the [quality standards for PR](#)

Discharge assessment and outcomes

Discharge assessment



of patients assessed between 1 June and 30 November 2019 had a discharge assessment.

National QI priority*

Ensure

70%

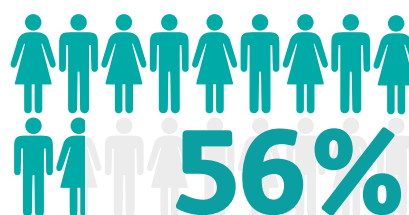
of patients enrolled for PR go on to have a discharge assessment.



Outcomes of PR



of patients experienced an improvement in exercise capacity.†



of patients experienced an improvement in health status.‡

* All national QI priorities align with the [quality standards for PR](#)

† As measured using the minimal clinically important difference (MCID) for [incremental shuttle walk test \(ISWT\)](#) or [6-minute walk test \(6MWT\)](#)

‡ As measured using the MCID for [COPD assessment test \(CAT\)](#)

How to use this report

1. Scope and data collection

The pulmonary rehabilitation (PR) audit, a component of the National Asthma and COPD Audit Programme (NACAP), is a continuous clinical audit with a biennial (in alternate years) organisational audit component, launched in March 2019 in England, Scotland and Wales. All services who treat patients for chronic obstructive pulmonary disease (COPD) are eligible to participate. These audits capture the process of treatment in patients who are treated by, and the structure and resources of, PR services.

This report, which is the first combined clinical and organisational report following the launch of continuous data collection, presents data describing:

- > patients assessed for PR between 1 June and 30 November 2019 (n=12,127),* and
- > the structure and resourcing of PR services between 1 July – 30 September 2019.

Contributing to the overarching national quality improvement (QI) objectives of the NACAP, it serves to empower stakeholders to use audit data to facilitate improvements in the quality of care. The clinical audit works under a consent model, so only data from patients who consented to be part of the audit have been reported.

The report highlights areas for QI that were identified in 2019. Providers and commissioners should consider how these can be delivered locally for the benefit of patients and the healthcare system. A selection of case studies, provided by participating PR services, are included in the report to showcase good practice. In addition, tips to achieving the QI priorities are included in the relevant sections of the report. For more information about the delivery of QI within the NACAP please view the programme's QI strategy available at: www.rcplondon.ac.uk/nacap-quality-improvement-resources.

The combined PR clinical and organisational 2019 audit report provides a suite of outputs designed for various audiences, shown on page 7. These can be all found at www.rcplondon.ac.uk/nacap-PR-2019.

* This cohort includes patients who:

- > completed an initial assessment but were not enrolled on a PR programme, or
- > enrolled and completed the PR programme by 31 August 2019, or
- > enrolled but were known to have dropped out of their PR programme.



2. Indicators included

Key process and organisation measures included in this report are: being referred to PR, waiting times to start of PR, walk tests, discharge assessment and PR services having a standard operating procedure. The outcome measures included in this report are improvement in exercise capacity and health status.

This report brings together the key findings, recommendations and national QI priorities from the 2019 PR clinical and organisational audits. Separate data analysis and methodology reports are available for both the clinical and organisational audits at: www.rcplondon.ac.uk/nacap-PR-2019. These provide the following information:

- > the full data analysis, presented with England, Scotland and Wales results, as well as combined results for all three countries denoted as 'All' in tables and figures, with explanatory notes throughout
- > nationally benchmarked clinical audit results for participating services, using variables based on national guidelines and standards (clinical audit only)
- > appendices, including the methodology for the audit.

It is not necessary to review the full analysis to appreciate the key messages available in this short report.

The clinical and organisational results together are designed to provide a picture of the care and service organisation provided to the cohort of patients with COPD assessed for PR who were

included in the audit, as well as their outcomes at discharge assessment. With each round of reporting, the NACAP aims to provide an increasingly comprehensive picture of PR care and service provision provided across the country as case ascertainment builds over the length of the continuous audit and changes over time become more apparent. Comparisons with previous audit reports have not been given in this report for two reasons:

1. datasets (both clinical and organisational) for the PR audit underwent considerable review and streamlining prior to their launch under NACAP making comparison difficult and potentially misleading, and,
2. the patient cohort included in the **PR interim report** (published in July 2020) was very small therefore making comparisons with it limited. Comparisons to the interim report have been presented, where appropriate, in the accompanying clinical audit data and methodology report but they have not been emphasised in this report.

However, with the move to continuous data collection, comparisons with previous audit rounds and therefore trend analysis and changes over time will become more extensive and robust.

Alongside the publication of this report, PR services will also be provided with site-level reports, presenting their own service-level data against both the national and devolved nation average. These reports are provided directly to the PR service responsible for participation in the NACAP PR audits via the NACAP web tool (www.nacap.org.uk). Run charts for key clinical dataset metrics are also accessible for authorised service web tool users to access; these display audit data in real time at provider- and national-level to support local QI. In addition, service-level audit data will be made publicly available on the NACAP web pages (www.rcplondon.ac.uk/nacap-PR-2019) and www.data.gov.uk, in line with the government's transparency agenda. Copies of our datasets, our good practice repository and all other resources can be found via our website: www.rcplondon.ac.uk/nacap-pr-resources.

3. Report structure

National breakdowns are given for England, Scotland and Wales are presented, as well as 'All' figures.

4. Audience and links to relevant guidelines and standards

The report is intended to be read by healthcare professionals; NHS managers, chief executives and board members; as well as service commissioners, policymakers, voluntary organisations and service users. A separate report has been produced for patients and the public and is available at: www.rcplondon.ac.uk/nacap-PR-2019. Where an area of care or service provision has been highlighted as a patient priority (something of particular importance to patients) by the NACAP patient panel this is shown with the patient priority icon displayed below.



References to the appropriate British Thoracic Society (BTS) Quality Standards (**Appendix A**) are provided at the beginning of each section.

Foreword by Sally Singh, pulmonary rehabilitation audit clinical lead



Welcome to the first National Asthma and COPD Audit Programme (NACAP) pulmonary rehabilitation (PR) combined clinical and organisational audit report. It presents data entered for over 12,000 patients assessed for PR between 1 June – 30 November 2019, and the structure and resourcing of PR services between 1 July – 30 September 2019.

Most PR services are participating in this national continuous clinical and snapshot organisational audits (87.7%), with well over half (63.2%) providing a complete organisational audit dataset and being included in the final analysis for report. Of course, the valuable insights gained from this report would not be possible without this high level of engagement and support from PR services up and down the UK. We owe a huge thank you to the services for recognising the importance of the national audit in improving patient care. The data provided is important to our understanding of the practice of PR, with respect to both the process and the clinical outcomes.

There is a great deal for PR services to be proud of, notably the impact of rehabilitation for the participant; the clinical outcomes show that a high proportion of patients achieve important gains in exercise performance (64.8%) and/or health status (55.5%). Equally, referrals to PR seem to be appropriate with only a small percentage (8.4%) of patients not proceeding to a PR programme.

Of course, the audit data identifies areas for improvement. Completion of rehabilitation remains stable (66.7%). However, those living within the most deprived areas of England, Scotland and Wales are still less likely to attend their discharge assessment than those living in the least deprived areas. This limits our overall understanding of the clinical impact on these groups and this inequality is an ongoing challenge for PR services that collectively we must strive to even out and share best practice.

There are still delays in patients accessing PR in a timely manner, with only 53.9% of patients with stable COPD commencing a PR programme within the 90-day (from receipt of referral) target. The quality standards indicate that patients with a Medical Research Council (MRC) grade 3–5 should be offered PR and, by and large, this is the case with the exception in England where 12.6% of services reported not offering programmes to MRC grade 5. Access to PR for the post-hospitalisation population remains low.








Not surprisingly, the majority of PR services patients were enrolled onto were centre-based (97.9%). We might anticipate a change in the future but in this audit period there were very few cases of home-based rehabilitation (1.6%).



We do not believe that the COVID-19 pandemic has affected this report, or the data contained within it, as the dataset was closed for this report on 10 April 2020 and therefore only includes patients who completed their PR programme by this point. It should be noted that during the COVID-19 pandemic, PR services have been severely challenged, and it is likely that future models of PR will not be exclusively based on directly supervised groups in rehabilitation centre. To date, the audit reports very little appetite for alternative models; we anticipate this is likely to change in the future.

We hope this data will provide valuable insights into the provision and outcomes of PR and support services to continue to improve the standard of the PR programmes offered to patients.

Recommendations

This section brings together recommendations and national QI priorities from both the PR clinical and organisational 2019 audits. The reference numbers given for these are split between recommendations (CA1/OA1) and national QI priorities (C1/O1). The same reference numbers are used for the recommendations / QI priorities in the full data analysis and methodology reports for each audit. Supporting standards/guidelines for recommendations, where applicable, are also presented in the full data analysis and methodology reports.

| Audience | Clinical audit recommendations (CA) | Organisational audit recommendations (OA) |
|-------------|--|---|
| National | <p>CA1. National organisations, service providers, commissioners and patient charities should work together to optimise timely referral to and start of PR for those with both stable COPD and following an admission to hospital with an acute exacerbation of COPD (AECOPD).</p> | - |
| PR services | <p> National QI priority C1: Start PR within 90 days of receipt of referral for 85% of patients referred for PR with stable COPD.</p> <p> National QI priority C2: Perform all walk tests to accepted technical standards, including ensuring all patients undertake a practice walk test at their initial PR assessment.</p> <p> National QI priority C3: Complete PR programmes and discharge assessments for 70% of patients enrolled for PR.</p> | <p> National QI priority O1: Offer PR to all patients with a COPD self-reported exercise limitation (Medical Research Council (MRC) grade 3–5). </p> <p> National QI priority O2: Assess outcomes of treatment for all patients attending PR as a minimum, measures of exercise capacity and health status. Ensure that measures are assessed in line with recommended guidance at the initial and discharge assessment.</p> <p> National QI priority O3: Ensure all PR services have an agreed standard operating procedure (SOP).</p> <p>OA1. Involve lay people and patients / carers representatives in service planning and development.</p> |
| | <p>CA2. Work with secondary care providers to identify all suitable patients for PR following an admission for AECOPD. The pathway should be integrated for all PR to start within 30 days for these patients.</p> | |

| | Clinical audit recommendations (CA) | Organisational audit recommendations (OA) |
|--|--|---|
| Audience | | |
| Commissioners, health boards, sustainability and transformation partnerships, integrated care systems | CA3. Work with your PR services to ensure that patients are seen in a timely manner (QI priority: starting PR within 90 days of receipt of referral). | OA2. Provide an adequate funding model for PR services to minimise service disruption and ensure service sustainability. |
| | CA4/OA3. Have a local resource plan in place to facilitate and encourage your local PR services to participate in the NACAP PR audit. | |
| | CA5. Provide adequate training and awareness for all staff of national, and where relevant, international guidance, ⁸ ie <i>BTS quality standards for pulmonary rehabilitation in adults (2014)</i> . ¹ | OA4. Provide adequate clinical lead management time to coordinate and manage/develop services. OA5. Work with your PR services to provide COPD patients who require it with transport to and from PR programmes in order to facilitate equity of access. |
| Primary and secondary care providers | CA6. Assess all COPD patients for suitability for referral to PR (patient-reported MRC grades 3–5).  | OA6. Offer PR to all patients with patient-reported MRC grades 3–5.  |
| | CA7. Provide all staff working with patients with COPD with information on the benefits of PR. | |
| For patients living with COPD and their families and carers | CA8/OA7. Ask for information on PR when you visit your GP / practice nurse and discuss whether a referral to your local PR service may be beneficial to you. | |
| | CA9. Make sure arrangements are made to refer you to your local PR service, if you are admitted to hospital with a worsening of your COPD. | OA8. Consider being a patient representative as part of the PR service team, if you have experience of COPD and PR. |



Section 1: Audit participation

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Key findings

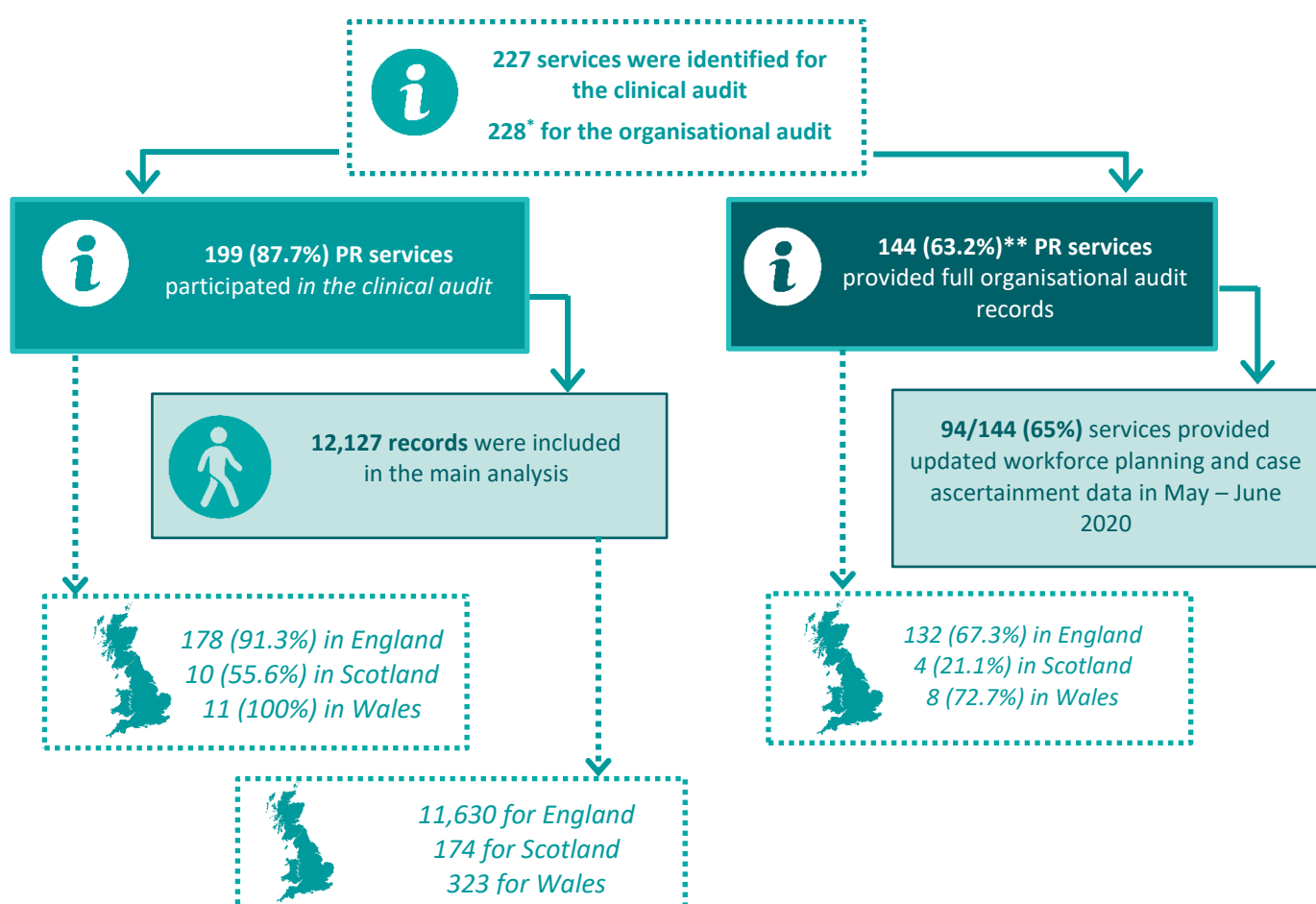
NACAP PR clinical audit

- > A high proportion (87.7%) of PR services are participating in the PR continuous clinical audit.
- > Very few services either did not register (4.4%) or registered but did not submit any data (8.0%).

NACAP PR organisational audit

- > 63.2% of PR services fully completed the PR organisational audit for 2019 and were included in the final analysis. A further 56 (24.6%) services also submitted partial information. In addition, 94 services out of the 144 (65%) included in the final data analysis also provided updated case ascertainment and workforce planning information in May to June 2020.

Case ascertainment data is available in the organisational audit data and methodology report. These are not available here as they should be reviewed and interpreted in the context of the additional information available within that report.



* Two services who participated individually in the organisational audit have since merged to participate as a combined service for the clinical audit.

** A further 56 services submitted partial information bringing the total participation rate to 200 services (87.7%).



Section 2: General information about COPD patients included in the 2019 PR clinical audit

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Median age at referral to PR



71 years



69 years



71 years



71 years

Key standards

NICE 2013 QS43 [QS1]:³ People are asked by their healthcare practitioner if they smoke, and those who smoke are offered advice on how to stop.

Key findings

- > The median age at referral was 71 years (interquartile range (IQR) 64–76).
- > More males (52.8%) were assessed for PR than females (47.1%).
- > The majority (82.5%) of patients referred for PR were white British.
- > In total, 12,127 patients were assessed for PR between 1 June and 30 November 2019.
- > Patients within the most deprived areas (quintile 1) in England (25.3%) and Wales (24.9%) represented a higher proportion of those assessed for PR. However, patients in quintile 2 represented the higher proportion of those assessed for PR in Scotland (30.0%).

Of patients assessed for PR:

- > a large proportion were either ex-smokers (68.8%) or current smokers (21.7%)
- > the majority had an MRC score of either 3 (35.7%) or 4 (31.1%)
- > 49.7% had a measure of FEV1/FVC ratio and 61.4% had a measure of FEV1
- > 35.7% had a history of cardiovascular disease and 35.6% a history of lower limb or lower back musculoskeletal disorders
- > 19.9% had a history of mental illness.



Section 3: Access to pulmonary rehabilitation services

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**Median time
from referral
to start of
PR***



83 days



106 days



154 days



84 days

**For patients with stable COPD*

Key standards

BTS quality standards for pulmonary rehabilitation in adults (2014) [Standard 1a]:¹ Referral for PR: a. People with COPD and self-reported exercise limitation (MRC dyspnoea 3–5) are offered PR.

BTS quality standards for pulmonary rehabilitation in adults (2014) [Standard 1b]:¹ Referral for PR: b. If accepted, people referred for PR are enrolled to commence within 3 months of receipt of referral.

BTS quality standards for pulmonary rehabilitation in adults (2014) [Standard 2]:¹ PR programmes accept and enrol patients with functional limitation due to other chronic respiratory diseases (for example bronchiectasis, interstitial lung disease (ILD) and asthma) or COPD MRC dyspnoea 2 if referred.

BTS quality standards for pulmonary rehabilitation in adults (2014) [Standard 3b]:¹ Referral for PR after hospitalisation for acute exacerbations of COPD: b. People referred for PR following admission with AECOPD are enrolled within 1 month of leaving hospital.

BTS quality standards for pulmonary rehabilitation in adults (2014) [Standard 4]:¹ PR programmes are of at least 6 weeks duration and include a minimum of twice-weekly supervised sessions.

NICE 2016 QS10 [QS5], statement 5:² People admitted to hospital for an acute exacerbation of COPD start a PR programme within 4 weeks of discharge.

Key findings

Referral to PR for COPD patients

- > Overall, the highest proportion of patients (66.8%) were referred from primary care or the community with stable COPD.
- > 5.2% of patients (632) were referred after admission to hospital for an acute exacerbation of COPD (AECOPD).
- > Not all services in England offered PR for MRC grade 3–5. In particular, MRC grade 5 was not offered PR in 12.9% of services in England.
- > All (100.0%) services offered PR to current smokers.
- > Most services (78.5%) would offer a second course of PR to patients if they had completed a course over a year ago.
- > After the initial assessment, 91.6% of patients were enrolled onto a PR programme. This shows that referrals are being appropriately made by primary and secondary care.

Data on referrals and access to PR for all patients (including non-COPD) is available in the full organisational audit data and methodology report. These are not available here as they should be reviewed and interpreted in the context of the additional information available within that report.

Waiting times for COPD patients

- > Overall, 53.9% of patients with stable COPD commenced PR within 90 days of receipt of referral. Waiting times were longest in Wales (median 154 days).
- > 12.8% of patients referred after admission to hospital for an AECOPD started PR within 30 days of referral.

Location and duration of services

- > The majority (97.9%*) of patients enrolled entered into a centre-based PR programme.
- > 1.6%* of patients received home-based PR, largely supported with supervised sessions in the home.
- > 34.0% of PR services offered a home-based programme.
 - Of these, 61.2% offered supervised PR sessions in the patient's home.
- > 66.5% of PR programmes were rolling programmes.
- > Nearly all (99.3%) PR services met the standard for centred-based PR programmes to be at least 6 weeks in duration.

**This does not include patients who received both centre and home-based PR (0.5%).*

Equity of access

- > The majority (65.3%) of PR services did not offer transport to support patients access to the service.

Contracting

- > 22.2% of PR services had at least some part of their service on a fixed-term contract.



National QI priority O1: Offer PR to *all* patients with a COPD self-reported exercise limitation (Medical Research Council grade 3–5) (*BTS quality standards for pulmonary rehabilitation in adults (2014). Standard 1a*).¹



Rationale

The BTS quality standard for PR in adults (2014) 1a states that people with chronic obstructive pulmonary disease (COPD) with a self-reported exercise limitation MRC grade 3–5 are offered PR. This audit reported that 12.9% of services in England did not offer PR to patients with MRC grades 3–5.

Tips to achieve this priority

- > Ensure that the service offers rehabilitation to all eligible patients by considering local referral pathways and working with primary, secondary and community care providers to optimise systems to support referral.
- > Consider accessibility for people with COPD and a self-reported exercise limitation of MRC grade 5.
- > Consider offering assistance with travel to PR centre for initial assessment.



National QI priority C1: Start PR within 90 days of receipt of referral for *85%* of patients referred for PR with stable COPD. (*BTS quality standards for pulmonary rehabilitation in adults (2014). Standard 1b*).¹

Rationale

The BTS quality standard for PR in adults (2014) 1b states that people with stable COPD who are referred for PR should start it within 3 months of receipt of referral. This audit reported 53.9% of patients with stable COPD started PR within 90 days of receipt of referral. Longer waiting times for PR have been linked with an increased risk of admission to hospital.⁸ Therefore ensuring patients start PR within 90 days is of the utmost importance.

Tips to achieve this priority

- > Incorporate a process of monitoring the data to check waiting times.
- > Have a list of patients willing to attend at short notice if there is a cancellation.
- > Ensure there is capacity in the class to reduce wait times into rehabilitation after assessment. For example, consider running rolling programmes rather than cohort.

Case study: Whittington Health Pulmonary Rehabilitation (PR) service

- > Issues around referral to treatment times and large did not attend rates at initial assessment and commencing the programme were identified in 2017.
- > Following this concurrent service/quality improvement (QI) projects to support and improve these issues were run in order to address these issues.

The service is now run as follows:

- > Daily triaging of new referrals which ensures good quality referrals, with correct diagnosis and meeting referral criteria. Those that don't are deferred and discharged with recommendations to gain the correct diagnosis or missing information. Once this information is received the new referral is added, triaged and an appointment offered accordingly.
- > Patients are contacted (by phone) within 2 days of receipt of referral to discuss referral and accepted/discharged as necessary. The PR programme and the commitment required are fully explained. If the patient cannot be reached, an answerphone message is left, and text message sent prompting the patient to call back. If the call is not returned within 5 days and/or if the patient is still not reachable, the referral is discharged with an opt-in letter for 3 months.
- > All rehabilitation assistants completing the telephone calls have received motivational interview training to support the calls and exploring barriers to attending PR, eg transport options and beliefs surrounding exercise and breathlessness.
- > If the invitation for PR is accepted, the next available appointment is offered at the venue where waiting times are lowest. It is explained to the patient that they may attend the programme at any centre they wish but the wait for starting PR may be longer. Exceptions are made if there are mobility/transport issues. This means that all patients can be booked onto a PR programme at any venue with capacity within 6 weeks.
- > Patients who cannot commit to the programme are offered a similar opt-in letter to those that we have been unable to reach. When they are ready to engage, they are asked to contact the PR service directly and are offered the soonest available appointment.
- > If the patient does not attend their appointment, contact is made at the time of the missed appointment and next soonest offered. If we are unable to contact the patient the referral is then discharged with an opt-in letter. A new referral is then opened if the patient contacts the service.
- > Ad hoc clinic appointments can be added throughout week if there is capacity at any of the sites, which does not clash with another service.
- > Patients receive reminder telephone calls and text messages the day prior to their assessment; this is in addition to the same being received before their initial session to reduce missed appointments.
- > To support better patient communication and understanding of PR and it's benefits we have:
 - > changed the wording in our letters to be more lay focused and using lay explanations. These include testimonials and encouraging language to prompt patients to engage when they are ready,
 - > rebranded the Breathe Better, Do More PR group to support the above as patient feedback feels this more accurately describes the main functional benefit of attendance, and
 - > updated all our websites to reflect this change in attitude with up to date information on the team and service.

100% of patients with stable COPD referred to Whittington Health Pulmonary Rehabilitation service started PR within 90 days of receipt of referral.

Case study: Northumbria Healthcare Rehabilitation Service

- A pulmonary rehabilitation (PR) screening assessment was implemented for all patients admitted to Northumbria Specialist Emergency Care hospital respiratory ward with AECOPD for more than 24 hours.
- Screening assessments are undertaken by the respiratory physiotherapy team who also lead the Northumbria Healthcare PR Service.
- Inpatients admitted with AECOPD are identified each morning using the electronic patient records and added to the physiotherapy clinical caseload for the day. These criteria are applicable 7 days a week so that patients admitted at weekends are not excluded.
- Band 5 physiotherapists are provided with training on PR while on rotation so that they understand the benefits and importance of referral to PR. This helps staff having informed and motivating conversations with patients about PR.
- The screening assessment includes checking patient's suitability for PR and referral onto the PR service.
- If patients are severely unwell on admission to hospital, eg requiring non-invasive ventilation (NIV), then the screening assessment for PR is delayed until towards the end of the patient's admission. This gives the physiotherapist screening the patient the opportunity to have a more detailed conversation with the patient about their quality of life, goal setting and benefits of PR.
- This focused approach has improved the referral rate to PR post-AECOPD admission.

15.9% of patients who had an initial PR assessment at Northumbria Healthcare Pulmonary Rehabilitation Service were referred following an AECOPD.



Section 4: Quality of pulmonary rehabilitation services

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**PR services
with a
standard
operating
procedure**



Key standards

BTS quality standards for pulmonary rehabilitation in adults (2014) [Standard 5]:¹ Pulmonary rehabilitation programmes include supervised, individually tailored and prescribed progressive exercise training, including both aerobic and resistance training.

BTS quality standards for pulmonary rehabilitation in adults (2014) [Standard 6]:¹ Pulmonary rehabilitation programmes include a defined, structured education programme.

BTS quality standards for pulmonary rehabilitation in adults (2014) [Standard 7]:¹ People completing pulmonary rehabilitation are provided with an individualised structured, written plan for ongoing exercise maintenance.

BTS quality standards for pulmonary rehabilitation in adults (2014) [Standard 8]:¹ People attending PR have the outcome of treatment assessed using as a minimum, measures of exercise capacity, dyspnoea and health status.

BTS quality standards for pulmonary rehabilitation in adults (2014) [Standard 10]:¹ Pulmonary rehabilitation programmes produce an agreed standard operating procedure (SOP).

Technical standard: field walking tests in chronic respiratory disease⁵

Key findings

Walk tests for COPD patients

Of patients assessed for PR:

- > 41.6% completed an incremental shuttle walk test (ISWT) and 42.3% a 6-minute walk test (6MWT); 7.6% of patients completed neither test.
- > 60.6% of those completing an ISWT and 29.7% of those completing a 6MWT test performed a practice walk test at assessment.
- > 86.7% of PR services were not adhering the technical standards for the conduct of the 6MWT, which is to use a 30-metre course.⁴

Aerobic and resistance training

- > Nearly all (95.8%) PR services are individually prescribing aerobic training.
 - Of these, 85.4% of services reported using the Borg breathlessness of perceived exertion scale for prescribing aerobic training.
- > All PR services (100.0%) offered resistance training.
 - Of these, 93.7% individually prescribed resistance training.
 - 77.8% of services reported using the Borg breathlessness of perceived exertion scale for prescribing resistance training.

Face-to-face education sessions

- > The median number of hours of education sessions scheduled during a centre-based PR programme was 12 (6–12) hours. This was lower in Scotland at 2.5 (1.5–4.5) hours.
- > All PR services (100.0%) offered face-to-face education sessions.
- > Physiotherapists and registered nurses made considerable contributions delivering face-to-face education sessions.

Written plans for on-going exercise maintenance

- > Most PR services (82.6%) provided patients with a written plan for ongoing exercise maintenance.

Standard operating procedure

- > 16.0% of PR services did not have an SOP.



National QI priority C2: Perform *all* walk tests to accepted technical standards, including ensuring all patients undertake a practice walk test at their initial PR assessment. (*BTS quality standards for pulmonary rehabilitation in adults (2014). Standards 8 and 9*)¹

Rationale

Accurate measurement of baseline is critical for exercise prescription and outcome assessment. However, 60.6% of patients who performed an ISWT and only 29.7% of patients who performed a 6MWT undertook a practice walk test.

Ensuring that walk tests are conducted to recommended standards, including performing a practice walk test, will ensure:

- > assessments are reliable
- > exercise can be accurately prescribed
- > that outcome assessments following PR are unbiased.⁵

Tips to achieve this priority

- > Ensure adequate assessment time for patients to complete a practice walk test.
- > Ensure the order of tests and questionnaires allows adequate rest between walk tests.
- > Ensure patients understand the importance of the practice walk to optimise benefits of rehabilitation.
- > To support correct conducting of walk tests, PR services should consider joining the pulmonary rehabilitation services accreditation scheme (www.prsas.org/).



National QI priority O3: Ensure *all* PR services have an agreed standard operating procedure (SOP) (*BTS quality standards for pulmonary rehabilitation in adults (2014). Standard 10*).¹

Rationale

The BTS quality standard for PR in adults (2014) 10 states that PR programmes produce an agreed SOP. This audit reported 16.0% of services did not have an SOP.

Tips to achieve this priority

- > Ensure that the services have an SOP that relates specifically to the rehabilitation service (this may include existing documents addressing broader issues by the host organisation).
- > Collaborate with other rehabilitation services to share best practice.
- > Use forums such as Respiratory Futures for example of best practice (www.respiratoryfutures.org.uk).

Case study: Birmingham Community Healthcare (BCHC) Community Respiratory Service

- All patients are allocated 90 minutes for an initial assessment.
- Patients are guided to the venue and the process of the initial assessment is explained. This allows time for recovery, if required, following the walk into the assessment clinic.
- After consent is gained, patients are taken to the Incremental Shuttle Walking Test (ISWT) area (never more than a few metres away) and remain seated while initial observations are recorded.
- A clinician walks alongside the patient for the first minute, ensuring the patient understands there should be no talking except for expressing concerns or uncomfortable symptoms induced by exercise.
- To allow for a rest period (>30 minutes), PR staff will then complete other objective measurements (height, weight, BMI), subjective questionnaires (CRQ/KBILD, CAT/ACT, LINQ and PHQ9, GAD (if indicated)) and a full detailed medical history is collected.
- Patients are then invited to repeat the ISWT independently.
- Before attending a 90-minute pre-assessment appointment, all patients are invited to a 'Prehab' meeting. The prehab meeting provides information on what is involved in the commitment to attend PR and provides an opportunity for any questions or concerns to be addressed prior to their initial assessment. Patients then have a much greater understanding of the pre-assessment process before they arrive at their appointment, can book a time and date for pre-assessment that suits them and can make an informed decision whether to take up the offer of PR.
- Clinic time assessments are run concurrently where two PR clinicians (one qualified and one L4-trained PR rehab assistant) are present to enable two assessments to be completed within the 90-minute appointment.
- All venues are large enough to complete both subjective and objective assessment within the same clinical area with a walking area of greater than 10 metres.

100% of patients at BCHC Community Respiratory Service had a practice walk test for ISWT.



Section 5: Discharge assessment and outcomes for COPD patients

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Patients who had a discharge assessment performed



66.4%



63.5%



76.6%



66.7%

Key standards

BTS quality standards for pulmonary rehabilitation in adults (2014) [Standard 7]:¹ People completing PR are provided with an individualised structured, written plan for ongoing exercise maintenance.

BTS quality standards for pulmonary rehabilitation in adults (2014) [Standard 8]:¹ People attending PR have the outcome of treatment assessed using as a minimum, measures of exercise capacity, dyspnoea and health status.

BTS quality standards for pulmonary rehabilitation in adults (2014) [Standard 9]:¹ PR programmes conduct an annual audit of individual outcomes and progress.

Key findings

Discharge assessment completed on COPD patients

Of patients assessed for PR between 1 June and 30 November 2019, and enrolled:

- > 66.7% had a discharge assessment
- > for patients with a history of cardiovascular disease (OR = 0.81 (95% CI = 0.74–0.89)) and depression (OR = 0.73 (95% CI = 0.63–0.83)) there was reduced likelihood of completing a discharge assessment
- > those in the most deprived areas of England, Scotland and Wales were less likely to attend their discharge assessment compared with those in the least deprived areas
- > 81.0% of patients received an individualised discharge plan.

Outcomes recorded for COPD patients

Of patients completing a discharge assessment:

- > for those with an MRC score reported at initial and discharge assessment, 39.5% reported an improved score
- > 70.5% who performed the 6MWT achieved improvements in exercise capacity and 60.4% who performed the ISWT achieved improvements^{4,5}
- > 55.5% who completed the COPD assessment test (CAT) achieved improvements in health status and 58.5% who completed the dyspnoea domain of the chronic respiratory questionnaire (CRQ) achieved improvements.^{6,7}



National QI priority C3: Complete PR programmes and discharge assessments for **70%** of patients enrolled for PR. (*BTS quality standards for pulmonary rehabilitation in adults (2014). Standards 4*)¹

Rationale

There are substantial patient-centred benefits of completing PR, namely a marked improvement in exercise capacity and health status. There is also an association between PR completion and lower hospital admission rates at 180 days.²⁹

Tips to achieve this priority

- > Incorporate a process to contact patients who have stopped attending to encourage reengagement and completion.
- > Involve patients who have previously completed a rehabilitation programme to encourage participation and support completion.
- > Ensure the patient receives clear information about the rehabilitation programme and the required commitment.



National QI priority O2: Assess outcomes of treatment for *all* patients attending PR as a minimum, measures of exercise capacity and health status. Ensure that measures are assessed in line with recommended guidance at the initial and discharge assessment (*BTS quality standards for pulmonary rehabilitation in adults (2014). Standard 8*).¹

Rationale

The BTS quality standard for PR in adults (2014) 8 states that people attending PR have the outcome of treatment assessed using as a minimum, measures of exercise capacity and health status. Ensure that measures are assessed in line with recommended guidance at the initial and discharge assessment. This audit reported 86.7% of PR services were not adhering to the technical standards for the conduct of the 6MWT, which is to use a 30-metre course.

Tips to achieve this priority

- > Ensure there is adequate space to conduct a 6MWT (30-metre course).
- > Use an alternative test (ISWT) if there is insufficient space to complete the 6MWT in line with recommended guidance.



Section 6: Staffing

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**PR services
with funding
for a named
clinical lead**



95.5%



50.0%



87.5%



93.8%

Key findings

- > Nearly all (93.8%) PR services had funding for a named clinical lead. Of these posts, 91.7% were filled.
- > Around two thirds (90/135, 62.5%) of PR services had a physiotherapist in the named clinical lead role.
- > 31.9% of services collaborated with lay people and/or patient representatives.
- > Over three quarters (77.1%) of PR services did not have audit support provided.



Section 7: Closing remarks

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Although this report covers a patient cohort largely not effected by the COVID-19 pandemic, many PR services began to reduce their service and/or close their doors in response to COVID-19 and to ensure the safety of their patients, very soon after it.

Where possible during the first COVID-19 lockdown period (spring–summer 2020) patients were offered care from PR services, many adapting the way they work to incorporate virtual/web/telephone-based packages so that they could continue to support patients. Many services were unfortunately unable to conduct walk tests (ISWT and 6MWT) as part of the baseline assessment due to the need to physically assess and measure the patient’s performance on these.

The NACAP supported services wherever it could during this time. The web tool remained open for all possible data entry and the PR dataset was adapted to ensure that patient records could be entered and completed in the absence of a walk test. The dataset was fortunately already in a position to capture alternative modes of delivery beyond centre-based. Verbal consent audit guidance was also produced and made publicly available to facilitate patient consent being obtained by services via virtual/web/telephone PR assessments.

We hope that with these efforts, and the continued dedication of the PR services we work with, some information can be gleaned from the care of COPD patients treated by PR services during the COVID-19 pandemic. Slowly, services which had to close are now beginning to reopen after a significant period of disruption and change and we hope that the information included within this report, as well as on the NACAP on the web tool, will help them plan what their service should look like post-COVID-19. However, we also recognise that for a time capacity will be reduced, with the infection control procedures that need to be adopted.

Like many other healthcare services, PR services (and NACAP with them) wait to see what the post-COVID-19 world holds for them. Will this stimulate the need for alternative home-based rehabilitation options to be offered alongside centre-based PR (which currently accounts for 97.9% of PR)? Time will tell. Until then, NACAP will continue to work with, and support, PR services in providing the best care and service provision possible.

Appendix A: BTS Quality Standards for Pulmonary Rehabilitation in Adults (2014)

| No. | Quality statement |
|-----|---|
| 1 | Referral for pulmonary rehabilitation: a. People with COPD and self-reported exercise limitation (MRC dyspnoea 3–5) are offered pulmonary rehabilitation. b. If accepted, people referred for pulmonary rehabilitation are enrolled to commence within 3 months of receipt of referral. |
| 2 | Pulmonary rehabilitation programmes accept and enrol patients with functional limitation due to other chronic respiratory diseases (for example bronchiectasis, ILD and asthma) or COPD MRC dyspnoea 2 if referred. |
| 3 | Referral for pulmonary rehabilitation after hospitalisation for acute exacerbations of COPD: a. People admitted to hospital with acute exacerbation of COPD (AECOPD) are referred for pulmonary rehabilitation at discharge. b. People referred for pulmonary rehabilitation following admission with AECOPD are enrolled within 1 month of leaving hospital. |
| 4 | Pulmonary rehabilitation programmes are of at least 6 weeks duration and include a minimum of twice-weekly supervised sessions. |
| 5 | Pulmonary rehabilitation programmes include supervised, individually tailored and prescribed, progressive exercise training including both aerobic and resistance training. |
| 6 | Pulmonary rehabilitation programmes include a defined, structured education programme. |
| 7 | People completing pulmonary rehabilitation are provided with an individualised structured, written plan for ongoing exercise maintenance. |
| 8 | People attending pulmonary rehabilitation have the outcome of treatment assessed using as a minimum, measures of exercise capacity, dyspnoea and health status. |
| 9 | Pulmonary rehabilitation programmes conduct an annual audit of individual outcomes and progress. |
| 10 | Pulmonary rehabilitation programmes produce an agreed standard operating procedure. |

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**National Asthma and COPD
Audit Programme (NACAP)**

Royal College of Physicians
11 St Andrews Place
Regent's Park
London NW1 4LE

Tel: +44 (0)20 3075 1526
Email: pulmrehab@rcplondon.ac.uk

www.rcplondon.ac.uk/nacap
@NACAPaudit
#pulmrehab
#PR



Royal College
of Physicians

NACAP