

# Statement and considerations for the remote delivery of pulmonary rehabilitation services during the COVID-19 pandemic

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# Statement and considerations for the remote delivery of pulmonary rehabilitation services during the COVID-19 pandemic

This document has been produced to support providers of pulmonary rehabilitation (PR) services in response to numerous requests for guidance received by the ACPRC during the COVID-19 pandemic to date.

The COVID-19 pandemic and associated national measures to reduce transmission have significantly impacted healthcare provision across the UK. Following the outbreak, many ‘non-essential’ services have adapted in order to provide a partially or fully remotely delivered service (telephone or video-conferencing) in order to continue to serve their local population. A survey of PR healthcare professionals was conducted in the development of this document in order to scope current practice in PR services across the UK.

The British Thoracic Society (BTS) have recently produced guidance on PR regarding remote assessment and reopening services for ‘business as usual’ participants (Gardiner et al., 2020a; Singh et al., 2020a). This document seeks to provide pragmatic guidance on the practical delivery of remote PR for healthcare professionals working in this field, which should be used alongside local guidance. We are unable to provide universal recommendations due to the extensive variation in factors currently affecting the delivery of PR services across the UK. The recommendations provided are for guidance only and may be updated in response to further government and national guidelines.

This guidance document is formed of two parts:

- **Part One** covers the background and rationale, methods of guidance development, adapted models of service delivery, risk assessment, workforce, and resources for remote delivery.
- **Part Two** will cover platforms for remote delivery, components of PR (assessment and re-assessment, exercise, and education) via remote delivery, and audit.

# Introduction

The COVID-19 pandemic has had an overwhelming impact on people's lives and healthcare delivery across the world. Prioritisation of NHS resource during the first UK national lockdown led to a temporary suspension of 'non-essential' services. Conventional face-to-face PR programmes were widely suspended in order to protect vulnerable groups and many staff redeployed in order to support the care of those acutely unwell. Currently, the majority of patients eligible for PR are still recommended to shield or limit their exposure by accessing online or remote consultations with healthcare professionals (Department of Health and Social Care, 2020a). Though the majority of services have restarted in some form, many have once again been faced with redeployment of staff during the second wave and many rehabilitation spaces or venues remain unavailable (Chartered Society of Physiotherapy (CSP), 2020a).

Technology-enabled remote delivery of non-urgent healthcare services has played a significant role in the resumption of non-urgent services in the NHS. Whilst this has facilitated the delivery of components of care during the pandemic for many, it is inevitable that some will be significantly disadvantaged by the movement to digital services. It is estimated that 7% of UK households are without internet access, and 10.7 million people in the UK have limited to no digital skills (Majeed, Maile, & Coronini-Cronberg, 2020). In a recent survey of PR service-users, of 170 survey respondents, 31% reported having never accessed the internet, and 29% reported no interest in accessing any component of PR digitally (Polgar et al., 2020). The spectrum of digital literacy of health care professionals expected to use potentially unfamiliar digital tools and technology must also be acknowledged. The rapid shift to remote delivery has highlighted the need for identification of training need and support in this regard. Willingness and acceptance of telehealth by staff is required in the provision of an effective remote service (Smith et al., 2020).

The efficacy of PR in improving health related quality of life (HRQoL) and exercise capacity in chronic respiratory disease populations is undisputed, and the need for PR remains high priority (McCarthy et al., 2015; Dowman, Hill, & Holland, 2014; Lee et al., 2017). The continually evolving circumstances and associated measures to reduce transmission of the novel virus have seen the rapid adaptation of PR services in the pursuit of continuing to serve our chronic lung disease population. The prevention of hospital admissions is of utmost importance not only in terms of an individual's health, but also in minimising the burden on our NHS and risk of COVID-19 transmission. COVID-19 has imposed an unprecedented challenge on accessibility to PR, further to the well-established existing issues with access, uptake and adherence (Rochester et al., 2015; Royal College of Physicians, 2018). The World Health Organisation (2020) recommended the use of tele-rehabilitation where feasible during the pandemic; indeed, the role and opportunity to evaluate remotely delivered PR has been highlighted (Houchen-Wolloff & Steiner, 2020; Jácome et al., 2020).



Remote physiotherapy is considered to comprise any means of service provision whereby the patient is remote from the practitioner; including email, SMS (short message service), telephone, web-based platforms or apps, and video conferencing (CSP, 2020b). In the context of PR, there is an existing body of evidence for home-based rehabilitation encompassing both digital and non-digital platforms, which has recently been summarised by Singh et al. (2020a). Though several studies demonstrated similar improvements in exercise capacity and health related quality of life (HRQoL) as observed in centre-based PR (public relations), all of the studies identified involved thorough face-to-face pre- and post-PR assessment; limiting the applicability of findings due to the restrictions faced by many services at this time.

In the unprecedented and ever-evolving circumstances we find ourselves in, we must continue to prioritise the safety and well-being of our patients and staff in the provision of adapted interventions that focus on improving HRQoL (health-related quality of life) in our chronic lung disease population. This document draws on the experience of UK PR professionals, highlighting examples of innovative practice seen during the pandemic, with the aim of supporting services to deliver the best possible care under varied restrictions. It is hoped that evaluation of remotely delivered PR during this time will assist in the pursuit of improving access to PR longer-term.

# Methods of guidance development

An online survey *ACPRC Pulmonary Rehabilitation provision during COVID-19 and beyond!* (delivered via SurveyMonkey) was developed by members of the ACPRC committee with an interest in PR, with the aim of scoping current practice and shaping this document. Inspired by queries received from ACPRC members during the pandemic, questions were developed with a view to scoping staff provision, extent and mode of service delivery, use of video-conferencing and associated challenges, and responsibility for post-COVID-19 rehabilitation. The survey was conducted between 20th September and 6th October 2020, and was publicised and disseminated via Twitter using the [@theACPRC](#) handle with the aim of promptly reaching as many respiratory physiotherapists working in PR services in the UK as possible. It was requested that one team member completed the survey on behalf of their PR service, and consent was assumed based on completion of the survey. A summary of the responses from the 46 participants are appended ([Appendix 1](#)).

A call of interest to contribute to the development and review this document was communicated via email to the ACPRC editorial board and respiratory leaders' group late September 2020, seeking to recruit experienced respiratory physiotherapists working in PR. Twelve reviewers were identified and subsequently two online meetings were held on 15th and 16th October 2020 to discuss the scope and contents of the document with those able to attend. Subsequently, the draft document was developed and two rounds of reviews were conducted over October and November 2020.

Furthermore, a rapid literature review was undertaken in order to inform practice and to identify any additional grey literature or relevant studies published following the release of the BTS guidance documents (Gardiner et al., 2020a; Singh et al., 2020a). The search terms used were: pulmonary rehabilitation, respiratory rehabilitation, tele-rehabilitation, remote delivery, and virtual.

# Adapted models of service delivery

It is recognised that the ability to deliver PR in the current circumstances is highly dependent on various local factors in addition to government imposed national and local guidelines. It is essential that PR services continue to adhere to the most up-to-date government guidance in order to minimise the risk posed by COVID-19 to both patients and staff (Department of Health and Social Care, 2020b). The impact of the pandemic has led to the need for adapted, in some cases untested, models of service delivery and prioritisation. Further, services have already and will continue to be required to adapt to the varying levels of restrictions imposed for the foreseeable future. Although some evidence-based models of remote service delivery were developed and in use prior to the pandemic (including forms of tele-rehabilitation), these models may need to be adapted or modified according to current circumstances. An example of service adaptation in response to COVID-19 is available here (Nottinghamshire Healthcare NHS Foundation Trust, 2020): <https://www.nottinghamshirehealthcare.nhs.uk/latest-news/covid19-drives-digital-innovation-in-pulmonary-rehab-3628>.

At the time of completion of the survey, 33% of participating services reported offering the exercise component of PR face-to-face within the patient's home, and 26% in a hospital or community site.

- Where feasible to do so, restarting face-to-face services is recommended due to the robust evidence of efficacy and benefits of face-to-face contact. The BTS have produced guidance regarding the safe resumption and continuation of respiratory services (BTS, 2020) and the delivery of face-to-face PR during the pandemic (Singh et al., 2020a, pp. 3–6).
- Where it is feasible, the delivery of outdoor exercise testing and/or exercise training may be considered based on local policy and procedures, including risk assessment. Consideration must be given to social distancing measures, weather limitations, and individual participant risk assessment.

We recommend the following model of service prioritisation for those able to offer limited *face-to-face services*:



**Priority 1:** Exercise testing (assessment) with prioritisation of high-risk groups\* as required.

*As able then add:*

**Priority 2:** Exercise testing (assessment) with all groups (usual prioritisation protocol).

*As able then add:*

**Priority 3:** Exercise component with prioritisation of high-risk groups\* as required.

*As able then add:*

**Priority 4:** Exercise component with all groups (usual prioritisation protocol).

*As able then add:*

**Priority 5:** Education component (complete face-to-face PR service).

\*High-risk groups (patient groups likely to be at increased risk of adverse events).

- Complex needs/multi-morbidity (for example, cognitive/balance/sensory impairment, concomitant cardiac/neurological disease).
- At risk of exertional desaturation <90% (for example, resting SpO<sub>2</sub> ≤92% or home oxygen user, pulmonary fibrosis, post-acute exacerbation, post-thoracic surgery).

Please note that this is intended as a guide only; individual risk assessment as per usual protocols is required.

Many services are now offering various methods of remote delivery to both ensure meeting increased demand and, in some cases, services are still unable to provide any face-to-face option. Subject to appropriate risk management procedures, remote delivery options may be used for triage, assessment, exercise and education components of PR (CSP, 2020b).

Survey participants reported using supervised 'virtual' rehabilitation via video-conferencing (50%), unsupervised exercise programmes with telephone support (63%) or app/web-based platform (50%) for remote delivery. Risk mitigation covering inclusion and exclusion criteria is considered within the Governance section of this document. The remote delivery of the separate components of PR (assessment and re-assessment, exercise and education) will be covered in further detail in part two.

It is essential to evaluate remote delivery options following implementation to inform future service delivery planning, minimising health inequalities, supporting case for technological hardware and software, identifying training needs of staff and demonstrating cost (CSP, 2020b).

## **Considerations in setting up a remotely delivered service:**

- Alignment with BTS quality standards for PR (BTS, 2014).
- Use of existing products and services provided by your trust where possible. Consult your local IT service in the consideration of a new product or service.
- Any new forms of delivering care should go through local governance procedures; including quality, data protection, and equality impact assessment.
- Consider the digital literacy, skills and confidence of staff, and the provision of support to ensure competence to safely and effectively utilise digital tools.
- Workspace and equipment required to safely and effectively deliver the service.
- Risk versus benefit of providing service, with consideration of feasibility and sustainability.
- Information and guidance for staff (including standard operating procedure).
- Communicating changes to service with internal and external stakeholders.

# Governance

## Risk assessment/mitigation

It is essential to regularly review the UK government website to ensure that service delivery continues to adhere to the latest guidance and associated measures to reduce transmission of COVID-19 (Department of Health and Social Care, 2020b): [www.gov.uk/coronavirus](http://www.gov.uk/coronavirus).

### Face-to-face services

If any components of service delivery are being provided face-to-face, a COVID-19 screening protocol is essential to reduce risk of transmission. The protocol should reflect the latest guidance for households with a possible or confirmed COVID-19 infection (Public Health England, 2020) and local guidance, to include:

- Contacting the patient one or two days before the planned face-to-face session to screen for patient and/or household member symptoms of COVID-19.
- Acute symptom screening on arrival.
- Advice to be given if the patient or household member has symptoms of COVID-19.
- Advice to be given to the patient regarding the safe resumption of face-to-face contact.

The BTS have produced guidance regarding the restarting conventional PR and associated risk mitigation procedures (Singh et al., 2020a).

### Remotely delivered services

If any components of service delivery are being provided remotely, comprehensive risk assessment must be conducted in line with local policy and procedures. Standard operating procedure (SOP) for any pre-existing remotely delivered components should be reviewed and updated (an appendix could be used to document this). Many PR services are offering both digital and non-digital modes of remotely delivered care. Identification and mitigation of potential hazards associated with each type and model of remote service delivery offered must be considered.

The BTS has produced a checklist of safety precautions for remotely supervised interventions (Singh et al., 2020a). Important considerations in mitigating risk associated with the delivery of remotely supervised PR include:

- Individual patient risk assessment; [Table 1](#) details recommended inclusion and exclusion criteria.
- Obtain informed consent (verbal or written) to remotely supervised PR ensuring the patient has a clear understanding of the intervention and associated risks and benefits. An example consent form for remotely supervised PR is appended ([Appendix 2](#)).
- Ensure the patient has a clear understanding and awareness of potential adverse events. Ensure to include procedure for medical emergency during remotely supervised contact within your SOPs. This should include appropriate review during and after the session

to ensure the patient's well-being in the case of observed adverse events or sudden unexpected video disconnection.

- Ensure to provide the patient with clear information and instructions regarding the use of the video-conferencing/other digital platform. An example patient information document (Microsoft Teams) is appended ([Appendix 3](#)).
  - Where possible, providing the patient with an opportunity to do a 'test run' prior to commencing their programme is advisable. Ensure to familiarise the patient with the 'speaker view' function of the video-conferencing tool to facilitate optimal visualisation of the instructing clinician.
  - In accordance with local privacy and data protection policy, ensure to advise patients against recording their group session as doing so in the absence of explicit consent from all members of the group would be considered a breach of confidentiality (NHSX, 2020a).
- Consider the use of a patient self-assessment checklist to prompt review of symptoms, preparation of equipment and environment, and access to support, prior to starting a session. An example checklist of this is appended ([Appendix 4](#)).
- Where remote monitoring is being used, patients should be provided with equipment that has been appropriately maintained and checked, as well as quarantined/cleaned in line with local infection control policy. Patients should be provided with the relevant guidance and instructions, and technique checked prior to commencing their programme to ensure safe and effective use.
- Risk assessment of available workspace and equipment to be used for the delivery of remotely supervised interventions is essential.
  - Consideration must be given to the screen size of the device to be used by the clinician (for example, laptop, desktop) in assessing staff to patient ratio requirement for group interventions. Dependent on individual patient risk assessment, a ratio of 1:4 may be appropriate when using a laptop, whereas 2:8 may be optimal in using a large TV screen, enabling one member of staff to focus on monitoring.
  - The use of headsets may be beneficial in optimising audio quality.
  - Consideration must be given to the background environment seen and heard by patients in order to ensure privacy, avoid unwanted distractions, and optimise instructive interaction with patients. Avoid windows/mirrors being in view, and take appropriate action to minimise any significant background noise. The volume of any music used in exercise sessions must be assessed to ensure the instructing clinician can be heard clearly by all; with consideration for any participants with any hearing impairment.
- Training needs of staff expected to use video-conferencing (and/or other digital platforms) must be assessed and appropriate support provided.
- Consideration of individual risk assessment is essential in grouping patients for exercise interventions based on monitoring requirements.

- In instances where the ability to meet service demand is significantly impacted due to imposed restrictions resulting in breach of maximum waiting times (BTS, 2014), this must be logged on the local trust's risk register in line with local policy and procedure.
- A health inequalities impact assessment is recommended in order to support the identification of approaches to reduce discrimination and improve access.

**📌 Table 1: Recommended inclusion and exclusion criteria for remotely supervised exercise testing and exercise component of PR.**

**Inclusion**

- Access to device capable of supporting the video-conferencing platform and reliable internet connection.
- Adequate digital literacy and competence to use video-conferencing and email, or reliable support of digitally competent family member/carer.
- Able to safely follow instructions in English or be supported by family/carer or remote interpreting service.
- Safe environment within home to perform exercise test/exercise programme.
- Able to mobilise and use any home exercise equipment safely and independently.
- Consents to participate in remote exercise testing/virtual PR programme.
- Able to provide informed consent and report adverse events.

**Exclusion**

- Significant unstable cardiac or other disease that would make exercise unsafe or prevent programme participation.
- Cognitive impairment with inability to follow instructions safely.
- Significant sight or hearing impairment (individual risk assessment where indicated).
- Impaired balance with risk of falls without supervision.
- Identified as high risk of exertional desaturation <90% (for example, resting SpO<sub>2</sub> ≤92% or home oxygen user, pulmonary fibrosis, post-acute exacerbation) and unable to remotely monitor pulse oximetry.

Please note that this is intended as a guide only; individual risk assessment as per usual protocols is required.

**Workforce**

Many PR services faced re-deployment of staff into the acute hospital and rapid discharge sectors to support the first wave of COVID-19. This came with increasing demand on hospital services and the drive to discharge as many suitable patients as possible back into the community setting to avoid the NHS being overly burdened. Though required at the time, the recommended temporary suspension of face-to-face PR services caused significant impact for the staff involved. Many staff were re-deployed to areas and specialities outside

of their usual remit and/or working unusual shift patterns in highly stressful environments. Although staff have pulled together to support the wider NHS team in acute service delivery, the significant impact on morale and staff well-being must be recognised. Trusts have been pro-active in supporting staff with increased access to well-being resources and counselling support (NHS Leadership Academy, 2020): <https://people.nhs.uk>. Teams need to consider easy access to well-being support of all staff who have worked through the pandemic, regardless of the role they have provided.

This impact must continue to be considered as the UK endures a second wave of COVID-19, which is coinciding with flu season and winter pressures. Services have also to contend with the significant impact this disruption to services has caused on waiting lists and waiting times for PR. Some may face further re-deployment in the future; services need to plan for this and how they can reduce this impact in the future. The utilisation of the existing workforce in a different way can go a long way in supporting the reduction of the backlog.

Many services are receiving referrals for post-COVID-19 patients; 57% of survey respondents reported being responsible for the delivery of a post-COVID rehabilitation service. Dependent on the provision of additional resource, the potential impact on existing capacity and demand issues must be considered. Guidance on the delivery of post COVID-19 rehabilitation using an adapted PR approach has been produced by the BTS (Singh et al., 2020b).

PR teams also need to consider the sustainability of services and how different tiered lockdown restrictions may impact on service delivery. Social distancing measures have reduced throughput of patients in face-to-face programmes. In some instances, remotely delivered services may play a role in managing service demand and reducing waiting times. As tier restrictions increase, some services may face loss of indoor venues; for example, in the Liverpool City region, all gyms and leisure centres were closed including those used for local PR services during tier 3 restrictions (prior to the second national lockdown). The provision of remotely delivered PR, home visits, and group outdoor activities (as weather permits) needs to be considered (and regularly reviewed) at a local level based on what can feasibly be offered by the service within the area they serve, as and when restrictions are updated.

Services offering any remotely delivered components of PR must ensure staff are suitably digitally literate and competent in using digital platforms used by the trust. Appropriate training and support needs to be provided (NHSX, 2020b): [www.nhsx.nhs.uk/covid-19-response/technology-nhs/web-based-platform-which-offers-video-calls-services/](http://www.nhsx.nhs.uk/covid-19-response/technology-nhs/web-based-platform-which-offers-video-calls-services/).

Upskilling existing support staff within services is a practical approach in supporting the continued service delivery. This serves to strengthen the workforce and ensure services can continue to support increasing numbers of patients. Developing skills and expanding capabilities within the existing workforce will create more flexibility, boost morale and support

career progression (NHS England, 2020a): [www.england.nhs.uk/ournhspeople/online-version/new-ways-of-working-and-delivering-care/making-the-most-of-the-skills-in-our-teams/](http://www.england.nhs.uk/ournhspeople/online-version/new-ways-of-working-and-delivering-care/making-the-most-of-the-skills-in-our-teams/). An example of band 4 competencies and duties for the delivery of virtual PR is appended (Appendix 5). Supporting staff to develop motivational interviewing skills can ensure teams are supporting the Making Every Contact Count (MECC) agenda and supporting increased uptake of PR (Health Education England, 2020a). Staff training and support resources are detailed within the 'Resources for remote delivery' section of this document.

Utilizing staff who may be shielding for remote assessments and interventions has been implemented by a number of services; this has increased capacity and ensured continuation of service delivery. A number of teams have opened this opportunity to shielding staff who may not routinely work within the PR service, but following appropriate training and upskilling, this has enabled staff to be utilised in direct patient care and enabled service to continue to run.

There is a large and potential under-utilised resource from the student physiotherapy body. Placements have been cancelled in some areas and changed significantly in others (CSP COVID-19 survey, 2020). Students can be utilised (again with training and development of an educator) to support the delivery of remote interventions. They are a highly trained and dedicated future workforce that could be mobilised to support the PR delivery. 'What makes a great placement' in the context of the COVID-19 response including virtual health-care delivery and placement models has been considered by the CSP (CSP, 2020c): [www.csp.org.uk/frontline/article/student-placements](http://www.csp.org.uk/frontline/article/student-placements).

# Resources for remote delivery

The pandemic has seen a rapid shift to remote consultation in primary and secondary care with the aim of reducing unnecessary face-to-face attendances; serving to accelerate work associated with the widespread implementation of technology-enabled care (NHSX, 2020b). Using local trusts' pre-existing digital facilities has several benefits including: staff familiarity, reduce training costs, use of existing authentication processes and data management protocols (NCSC, 2020). Healthcare professionals must adhere to their local trust's clinical and information governance guidance in the use of remote delivery platforms. This section provides an overview of the available resources for the remote delivery of PR. Part two of this guidance document will cover further detail and evaluation of platforms for remote delivery.

## Video conferencing platforms

- **Microsoft Teams** (replacing Skype for Business): [www.microsoft.com/en-gb/microsoft-365/microsoft-teams/group-chat-software](http://www.microsoft.com/en-gb/microsoft-365/microsoft-teams/group-chat-software).
  - Allows you to host audio, video, and web conferences with anyone inside or outside your organisation.
  - Servers based in EU rather than US which helps with GDPR compliance.
  - Requires purchase of Office 365: Business Essentials (£3.80/user/month), Business Premium (£9.40/user/month).
- **Attend Anywhere**: [www.attendanywhere.org.uk](http://www.attendanywhere.org.uk).
  - Your Trust must register via NHS Improvement to get access.
- **Zoom**: <https://zoom.us>.
  - Basic free plan: unlimited 1:1 meetings, limited to 40 minutes on group meetings, up to 100 participants.
  - Paid plans are available including Zoom for healthcare: <https://zoom.us/healthcare>.
- **Webex**: [www.webex.com](http://www.webex.com).
  - Basic free plan: unlimited meetings with up to 100 participants, unlimited time per meeting.
  - Paid plans are available including Webex for telehealth: [www.webex.com/industries/healthcare.html](http://www.webex.com/industries/healthcare.html).
- **OneConsultation**: <https://modalitysystems.com/software/oneconsultation-healthcare/>.
  - Fully managed and customisable virtual consultation service using Microsoft 365 technology.
  - One-month free trial available.
- **accuRx**: [www accurx.com](http://www accurx.com).
  - Free services include: individual text messaging, video consultation, digital documents, medical surveys.





- Paid plan (accuRx plus) includes: patient triage, batch messaging and appointment reminders, wider range of surveys.

(Gardiner et al., 2020a; NHSX, 2020b).

## Web-based platforms

- **myCOPD:** [www.nhs.uk/apps-library/mycopd/](http://www.nhs.uk/apps-library/mycopd/).
  - Online COPD self-management app platform comprising education programmes, inhaler technique videos, weather/pollution alerts, and home rehabilitation classes (6-week graduated programme).
  - Commissioned in some areas (free access for patients with COPD). Able to purchase myCOPD license via App Store/Google play for one-off payment of £39.99.
  - Related evidence: Bourne et al., 2017.
- **SPACE for COPD:** [www.spaceforcopd.co.uk](http://www.spaceforcopd.co.uk).
  - Self-management Programme of Activity, Coping and Education for COPD: manual and online self-management programme.
  - Contains a range of educational topics including: information about medication, breathing control, exercise and nutritional advice. Individuals are encouraged to set goals and progress through a prescribed exercise programme and achieve weekly targets.
  - Additional features include a glossary, frequently asked questions, a moderated discussion forum, an 'Ask the expert' facility which provides email access to a multi-professional team of experts, and a news blog (University Hospitals of Leicester NHS Trust, 2020).
  - Contact via website to register for paid access to manual and/or online programme.
  - Related evidence: Chaplin et al., 2017; Horton et al.; 2018, Bourne et al., 2020.
- The Innovation Agency (2020) present digital options seeking to improve the patient's experience of PR. Examples include remote-monitoring (for example, CliniTouch Vie) and exercise prescription apps (for example, Rehab Guru); further information can be found on their website (Innovation Agency, 2020): [www.innovationagency.nhs.uk/innovation-insight-pulmonary-rehabilitation](http://www.innovationagency.nhs.uk/innovation-insight-pulmonary-rehabilitation).

## Education resources

- ACPRC:
  - Patient information leaflets (ACPRC, 2011): [www.acprc.org.uk/publications/patient-information-leaflets/](http://www.acprc.org.uk/publications/patient-information-leaflets/).
- Asthma UK: [www.asthma.org.uk/advice/inhaler-videos](http://www.asthma.org.uk/advice/inhaler-videos).
- British Lung Foundation (BLF): [www.blf.org.uk/support-for-you](http://www.blf.org.uk/support-for-you).
  - Stay Active and Stay Well (BLF, 2017): [www.blf.org.uk/support-for-you/keep-active/exercise-video](http://www.blf.org.uk/support-for-you/keep-active/exercise-video).

- Coronavirus and COVID-19 (BLF, 2020): [www.blf.org.uk/support-for-you/coronavirus](http://www.blf.org.uk/support-for-you/coronavirus).
- British Thoracic Society:
  - PR resource pack (Gardiner et al., 2020b): [www.brit-thoracic.org.uk/about-us/covid-19-information-for-the-respiratory-community/](http://www.brit-thoracic.org.uk/about-us/covid-19-information-for-the-respiratory-community/).
- European Lung Foundation (ELF): [www.europeanlung.org/en/lung-disease-and-information/lung-diseases/](http://www.europeanlung.org/en/lung-disease-and-information/lung-diseases/).
- Living well with COPD: [www.livingwellwithcopd.com](http://www.livingwellwithcopd.com).
- Lung Foundation Australia: <https://pulmonaryrehab.com.au/importance-of-education/education-topics/>.
- myope: [www.nhs.uk/apps-library/mycopd/](http://www.nhs.uk/apps-library/mycopd/).
- SPACE for COPD: [www.spaceforcopd.co.uk/](http://www.spaceforcopd.co.uk/).

## Staff training and support resources

Managing health and well-being:

- <https://people.nhs.uk> (NHS Leadership Academy, 2020).
- [www.england.nhs.uk/ournhspeople/online-version/lfaop/support-during-covid/](http://www.england.nhs.uk/ournhspeople/online-version/lfaop/support-during-covid/) (NHS England, 2020b).
- [www.acprc.org.uk/resources/covid-19-information/self-care-for-staff/](http://www.acprc.org.uk/resources/covid-19-information/self-care-for-staff/) (ACPRC, 2020).

Supporting redeployment and upskilling:

- [www.england.nhs.uk/ournhspeople/online-version/new-ways-of-working-and-delivering-care/making-the-most-of-the-skills-in-our-teams/](http://www.england.nhs.uk/ournhspeople/online-version/new-ways-of-working-and-delivering-care/making-the-most-of-the-skills-in-our-teams/) (NHS England, 2020a).
- [www.e-lfh.org.uk/programmes/covid-19-recovery-and-rehabilitation/](http://www.e-lfh.org.uk/programmes/covid-19-recovery-and-rehabilitation/) (Health Education England, 2020b).
- [www.nhsx.nhs.uk/covid-19-response/technology-nhs/web-based-platform-which-offers-video-calls-services/](http://www.nhsx.nhs.uk/covid-19-response/technology-nhs/web-based-platform-which-offers-video-calls-services/) (NHSX, 2020b).
- [www.vc.scot.nhs.uk](http://www.vc.scot.nhs.uk) (NHS Scotland, 2020).
- [www.makingeverycontactcount.co.uk](http://www.makingeverycontactcount.co.uk) (Health Education England, 2020a).
- Free training is available: [www.eventbrite.co.uk/e/register-your-interest-introduction-to-motivational-interviewing-202021-tickets-56111935309](http://www.eventbrite.co.uk/e/register-your-interest-introduction-to-motivational-interviewing-202021-tickets-56111935309).

## Other resources

Coronavirus guidance for clinicians and NHS managers:

- [www.england.nhs.uk/coronavirus/?priority-taxonomy=774cee22-d896-44c1-a611-e3109c-ce8eae](http://www.england.nhs.uk/coronavirus/?priority-taxonomy=774cee22-d896-44c1-a611-e3109c-ce8eae) (NHS England and NHS Improvement, 2020).

PR SOP examples:

- [www.respiratoryfutures.org.uk/resources/regional-and-local-resources/pulmonary-rehabilitation-standard-operating-procedures-sops/](http://www.respiratoryfutures.org.uk/resources/regional-and-local-resources/pulmonary-rehabilitation-standard-operating-procedures-sops/).

### Managing questionnaires online:

- LimeSurvey: [www.limesurvey.org/en/](http://www.limesurvey.org/en/).
  - Free online survey software (paid plans available).
- Microsoft Forms: [www.microsoft.com/en-gb/microsoft-365/online-surveys-polls-quizzes](http://www.microsoft.com/en-gb/microsoft-365/online-surveys-polls-quizzes).
  - Requires purchase of Office 365.
  - Can be used for surveys, polls, and quizzes.
- REDCap: [www.project-redcap.org](http://www.project-redcap.org).
  - Secure web application for building and managing online surveys and databases. Some PR services are using this to distribute their assessment questionnaires to patients.

### Student placement guidance:

- [www.csp.org.uk/professional-clinical/practice-based-learning](http://www.csp.org.uk/professional-clinical/practice-based-learning) (CSP, 2020c).

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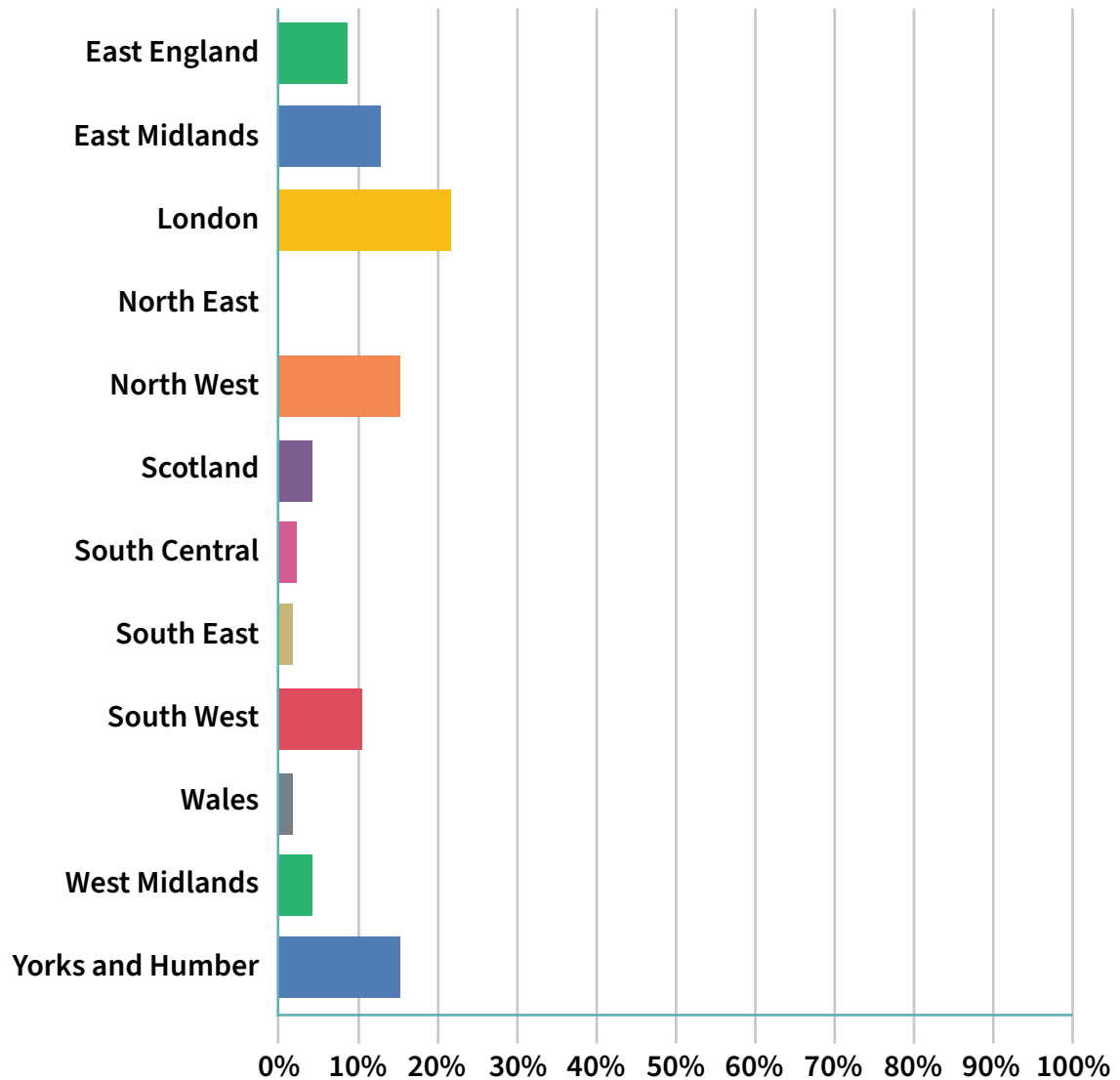


# Appendices

## Appendix 1: Summary of survey responses (ACPRC Pulmonary Rehabilitation provision during COVID-19 and beyond!)

### Question 1

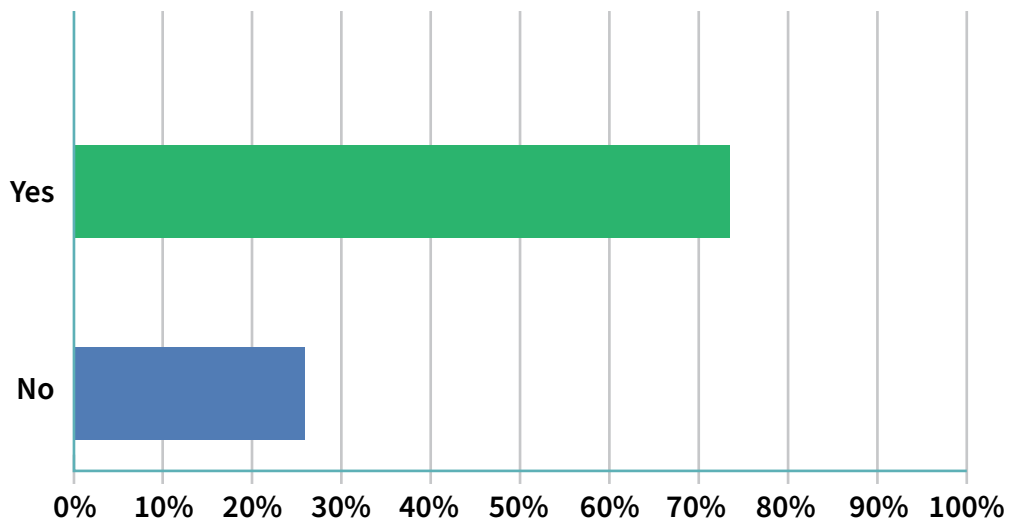
Which region do you work in?



Answered: 46. Skipped: 0.

### Question 2

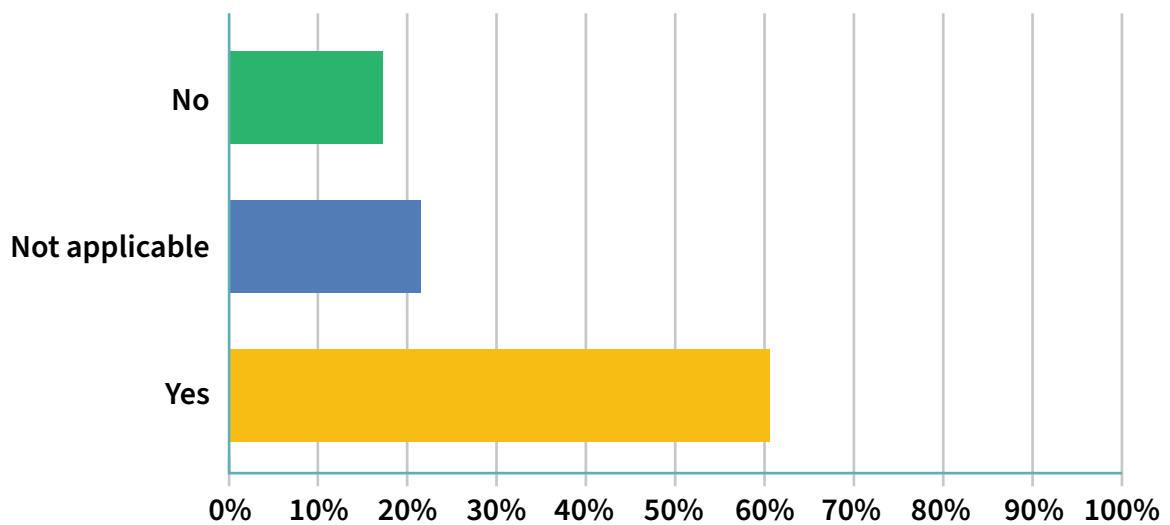
Have you or any members of your Pulmonary Rehabilitation team been redeployed at any points since the outbreak of COVID-19?



Answered: 46. Skipped: 0.

### Question 3

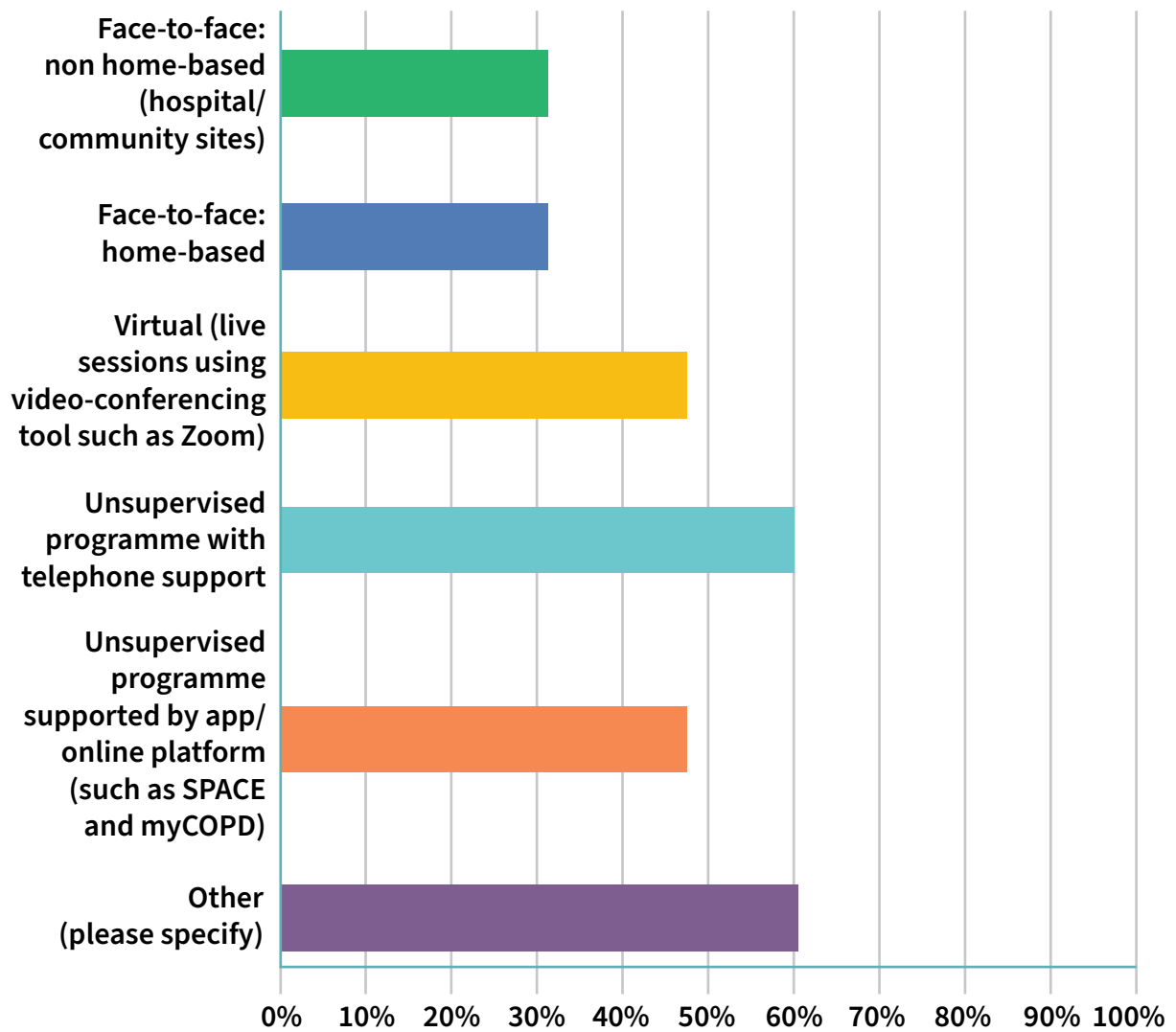
If you answered yes to Question 2, has your staffing provision now returned to pre-COVID-19/‘usual’ levels?



Answered: 46. Skipped: 0.

#### Question 4

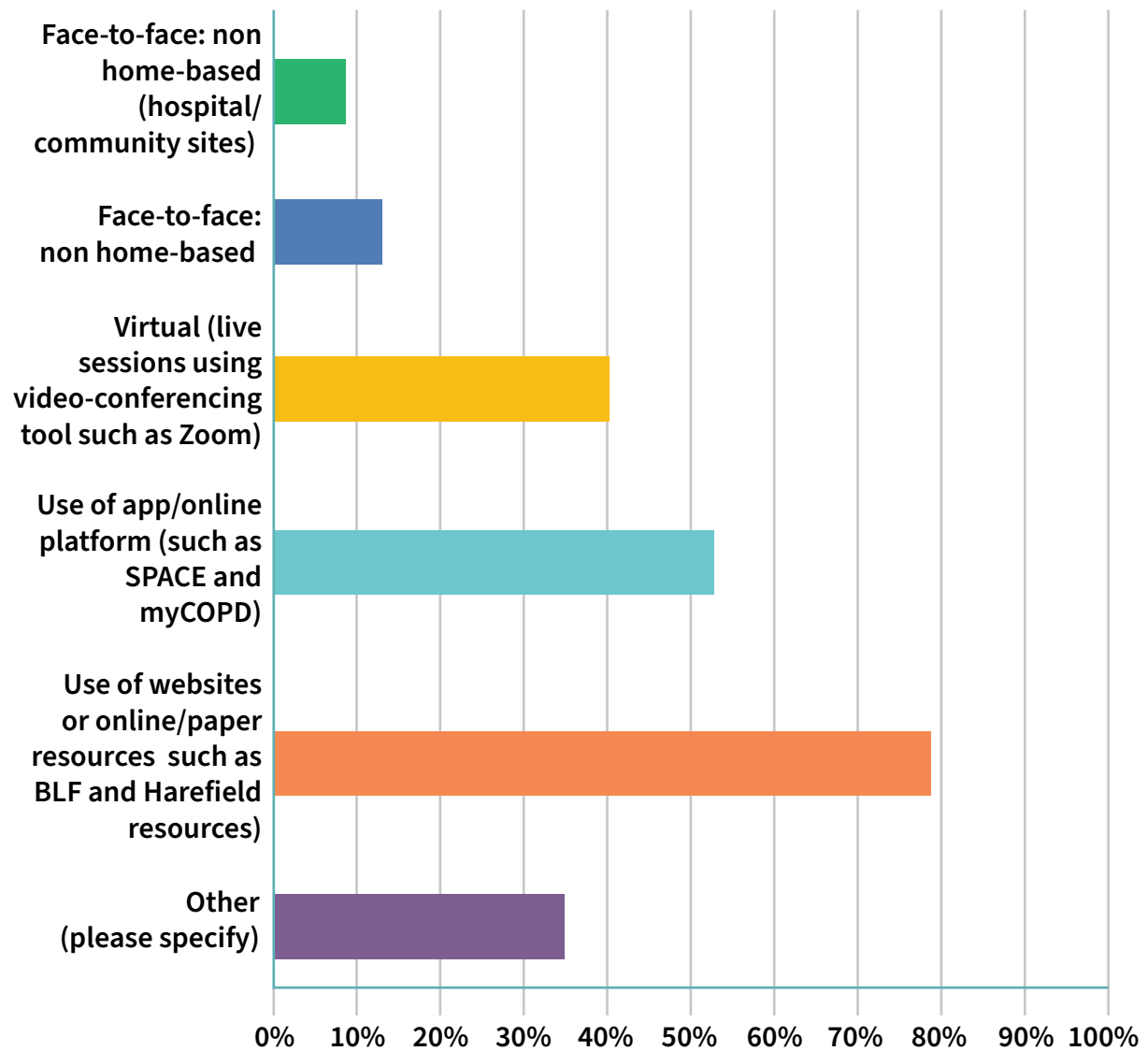
What form(s) of PR delivery is your service currently offering for exercise?



Answered: 46. Skipped: 0.

### Question 5

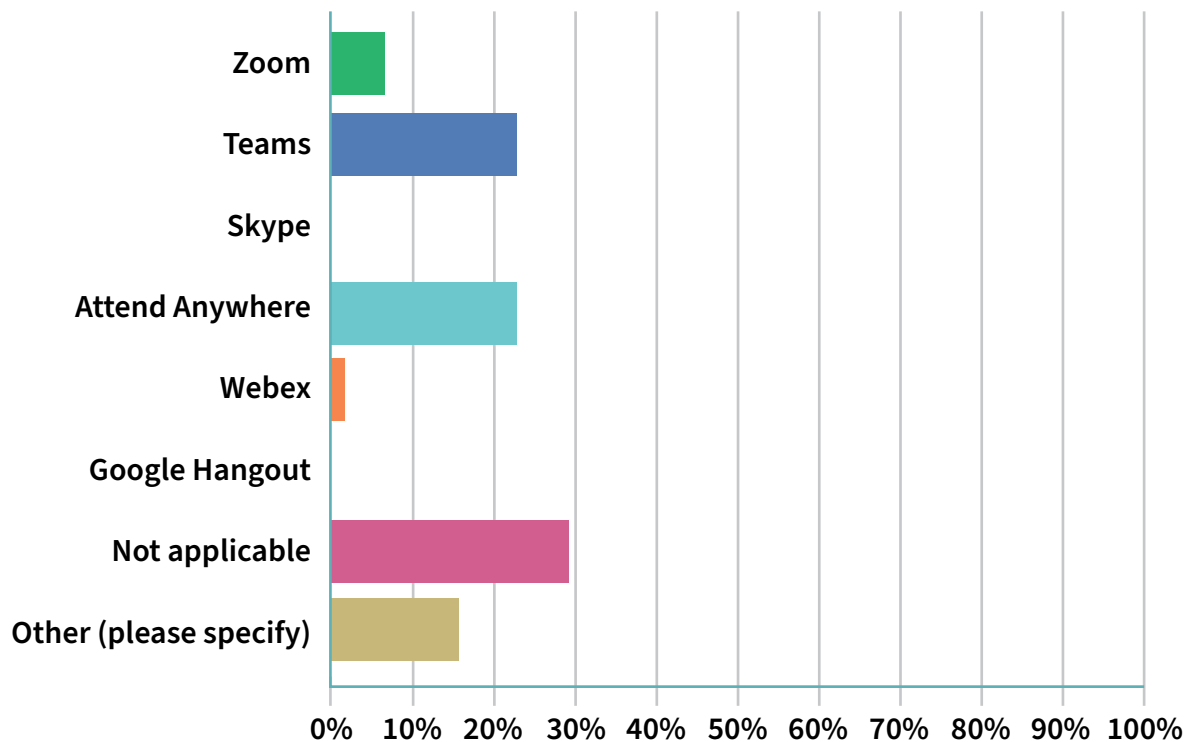
What form(s) of PR delivery is your service currently offering for education?



Answered: 46. Skipped: 0.

### Question 6

If you're providing a 'virtual' rehab service, which video-conferencing platform are you using?



Answered: 44. Skipped: 2.

### Question 7

If you're providing a 'virtual' rehab service, what challenges have you experienced in delivering this? (for example, upskilling staff, limited resources, poor uptake, and so on). (Please move on to [Question 8](#) if you're not currently providing a 'virtual' service.)

- 14/33 poor uptake by patients.
- 13/33 limited access to devices/internet (patient).
- 9/33 technical issues.
- 8/33 need for upskilling staff and/or appropriate space.

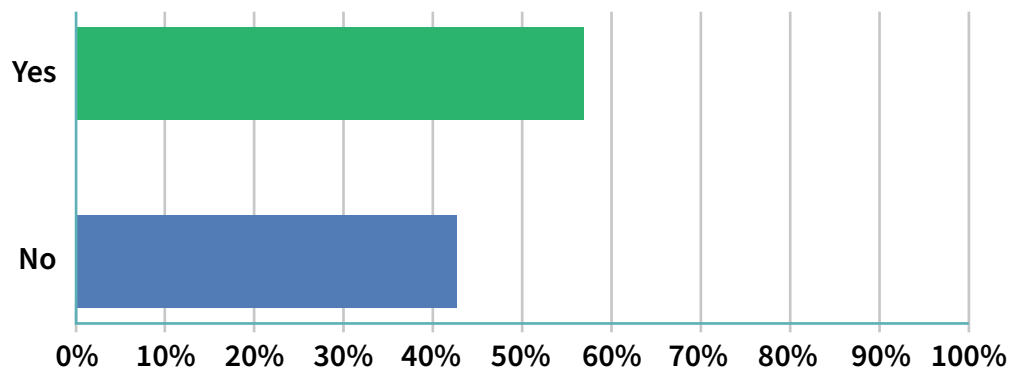
### Question 8

If you answered Yes to [Question 8](#), has your service been provided with any form of additional resources to support this? (for example, staffing, equipment). (If you answered No to [Question 8](#), please move on to [Question 10](#)).

- 18/29 reported 'no'.
- 11/29 reported provision of some form of additional resource including: pulse oximeters, iPads to loan, headsets, 4G sim cards for laptops, camera equipment, physical screens for use in face-to-face exercise sessions, additional exercise equipment, additional laptops, large smart touch screen.

### Question 9

Is your service currently responsible for the provision of any form of post-COVID rehabilitation? (not associated with 'business as usual' participants).



### Question 10

Are there any changes to your service (that have occurred as a result of COVID-19) that you think will either remain in place or continue to evolve long-term?

- 28/45 virtually delivered components of PR service.
- 10/45 remote (telephone or video-conference) subjective/'pre' assessment.
- 4/45 increased use of web-based platforms.

## Appendix 2: Example consent form for remotely supervised PR



A lifetime of specialist care

Royal Brompton & Harefield   
NHS Foundation Trust

**Pulmonary Rehabilitation**

**Harefield Hospital**

Hill End Road

Harefield

UB9 6JH

T: +44 (0)1895 828851

F: +44 (0)1895 828889

Email: [rbh-tr.harfieldpr@nhs.net](mailto:rbh-tr.harfieldpr@nhs.net)

I \_\_\_\_\_ agree and consent to the following:

- I am voluntarily participating in an initial Pulmonary Rehabilitation assessment via video call.
- I understand that this is a new initiative and the background and benefits of the programme have been explained to me.
- I have access to a technological device with real-time video camera function and internet connection, and can operate this independently or with the help of a household member.
- I am willing to have a designated area at home openly displayed to a member of the pulmonary rehabilitation team during videoconferencing sessions.
- I understand that when participating in any exercise/objective tests there is a risk of injury.
- I will ensure that an able-bodied person will be present in the house throughout the entire assessment.
- I will ensure that I have access to a home telephone or mobile during the video call for contact in case of an emergency or loss of videoconferencing contact.
- I am taking part at my own risk and assume all risk of injury to myself.
- The Royal Brompton and Harefield NHS Foundation Trust and physiotherapists on this programme accept no liability.

**Name (Print)**

\_\_\_\_\_  
**Signature**

\_\_\_\_\_  
**Date**

\_\_\_\_\_



[www.rbht.nhs.uk](http://www.rbht.nhs.uk)



@RBandH





# Appendix 3: Example patient information document on use of video-conferencing platform

## Pulmonary rehabilitation – virtual classes

Welcome to the pulmonary rehabilitation virtual classes!

We are holding our virtual classes using the video conferencing platform called Microsoft Teams. There are a few steps we will ask you to follow to join our virtual classes and to make sure that you can exercise safely at home.

Please read this document in full.

Look out for the  icon to show you that you need to do something. We have also highlighted some terminology using this icon .

### Step 1 Consent to join the virtual classes

After your pulmonary rehabilitation assessment, which is carried out over the telephone or in your home, we need to formally have your consent to join our virtual classes and take part in the exercises. This is done by emailing the pulmonary rehabilitation team, and it also allows us to double-check that we have the correct email address for you.

 Please email us at [wsh-tr.pulmonaryrehabilitation@nhs.net](mailto:wsh-tr.pulmonaryrehabilitation@nhs.net)

### Step 2 How to join our virtual classes

We are holding these classes using Microsoft Teams which is a secure and safe video conferencing application. You will be joining a group of patients with similar breathing conditions and will be able to see them taking part in the exercises and they will be able to see you.

We will be sending you an invitation to join our classes by email. The email will come from the pulmonary rehabilitation team and will use the email address from step 1 so you will know it is from us. The email will contain a link that allows you to join the virtual classes and the link will remain the same for the duration of the programme. The link looks like this:

#### [Join Microsoft Teams Meeting](#)

 Please find this email before the class starts.

You do not need to download any special software to do join in, although there is an app for Microsoft Teams available should you wish to download and use this. There are instructions here for both options. Microsoft Teams will call our class a 'meeting' – this is fine!

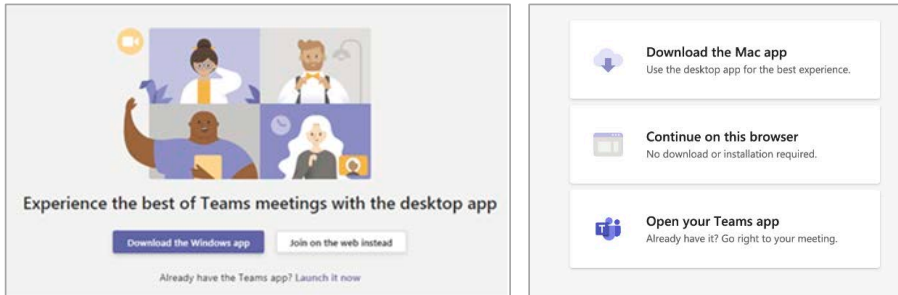
You will need to use a mobile phone, tablet or computer, with a webcam and microphone – quite often these are included within modern computers and tablets.

Putting you first

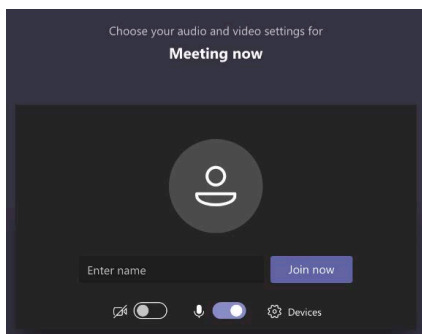


### Using a web browser – no need to download any software

1. Open your email programme and find the email from the pulmonary rehabilitation team which includes the link.
2. Left mouse click on the link to the Teams meeting, which will look similar to this:  
[Join Microsoft Teams Meeting](#)
3. Your web browser should open at the following screen (this depends on what type of computer you are using):



4. Click on 'Join on the web instead' or 'Continue on this browser'  
You may be prompted to allow access to your camera and microphone. Please choose 'allow' so we are able to see and hear you!
5. Enter your full name and click 'Join now'



6. You may be asked to wait until someone lets you into the class.
7. When you have joined, a toolbar will display showing your camera and microphone being switched on or off, make sure they are switched on to start with – it is shown here as off.



Putting you first

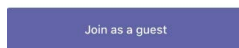
### Using the Teams app

1. Download and install the Teams app from your app store (e.g. Apple App Store or Google Play Store) on your device.
2. Open your email app on your mobile phone or tablet.
3. Open the email from the pulmonary rehabilitation team and press on the link which may look like this:



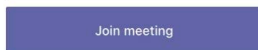
#### Join Microsoft Teams Meeting

4. The Teams app should open.
5. You should select the option to 'Join as a guest'.

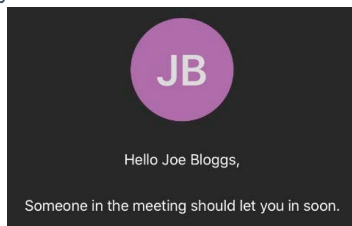


6. Enter your full name then click on 'Join meeting'

Type your name, then select  
Join meeting.





7. You may be asked to wait until someone lets you into the meeting.



8. You will need to enable your camera and microphone so press on these icons to turn them on if needed – they are shown as crossed through if not enabled.



### Glossary

-  **Web browser** – used for looking up information on the internet. Examples are Google Chrome, Internet Explorer, Safari, Microsoft Edge.
-  **Mobile device** – this includes smartphones and tablets, such as iPhones, iPads, Android phones and tablets.

Putting you first

### Step 3 About the virtual classes

Our pulmonary rehabilitation classes are held on **\*\*DAY\*\*** at **\*\*\*time\*\*** for xxx weeks.

The classes will last two hours at most so please be available for this whole period of time. It is important to join as many classes as you can in order to gain the most benefit.

The virtual classes will be available to join **15 minutes early** so you can test out joining using Microsoft Teams. We do need to be able to **see and hear you** to make sure you are okay during the exercises. We may ask you to mute (turn off your microphone) during the exercises as it could get quite noisy, but the therapist will show you how to do this.

### Step 4 Do you need any special equipment?

The quick answer is no! The exercises are designed so you can complete them at home, but it is helpful to have some items at hand to use during the class.

**Please have these items ready to use before the class starts**

- Theraband – you can find this in your starter pack
- Drink of water
- Blue inhaler
- GTN spray, if prescribed
- Oxygen, if prescribed
- A chair close by in case you need to sit down
- BORG breathlessness scale– you can find this in your starter pack
- Record of exercise sheet and a pencil or pen

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## Step 5 Before you start the class

Please consider the following before each class starts:



Do you feel well today? If not, do not exercise and contact the team via the CCC.



Have you had breakfast or lunch? A light meal a couple of hours prior to class is ideal.



Do you have enough space? Have you removed rugs?



Is there a chair you can hold the back of for balance or a kitchen worktop?



Please shut pets away so they are not a trip hazard!



Have you had all your prescribed medications, including inhalers?



Have a glass/bottle of water and maybe a towel close by as you may sweat slightly.



Have you got good fitting shoes and appropriate clothing on?



Place a telephone nearby or make sure you are wearing your pendant alarm



Make sure that a family member, friend or carer is aware of the times that you are exercising

Putting you first

## Step 6 During the exercise part of the class

Please consider remember the following whilst you are exercising – we will remind you as well!



Make sure you have your blue inhaler, GTN spray and oxygen (if prescribed) nearby



If you start to feel unwell, stop the exercise and sit down. Alert the staff.



Have the sound muted during the exercise. If you want to ask any questions, remember to unmute so we can hear you.



If you feel you are above a BORG 3 or 4 before the time is up, please take time to rest and recover before continuing.

Most of all have fun and enjoy some gentle exercise!

## Step 7 Keep the pulmonary rehabilitation team up to date

Please contact the pulmonary rehabilitation therapists prior to the class to discuss:

- Any changes to medications
- If you have felt unwell
- New joint or worsening joint pains
- If any new tests have been arranged for you by your GP

We would like to remind you that this is a group class, albeit a virtual one. Please avoid discussing personal matters during the virtual group as we can contact you separately about these if needed. This helps protect your confidentiality.

### Contact information

The best way to contact the pulmonary rehabilitation team is by calling the Suffolk Community Healthcare CCC on [0300 123 2425](tel:03001232425)

The email address for the pulmonary rehabilitation team is not monitored, and is only used to receive consent emails from step 1, and to send out the links to the virtual meetings. It should not be used to contact the pulmonary rehabilitation team otherwise.

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## Appendix 4: Example of remotely supervised PR patient self-assessment checklist



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### Virtual Pulmonary Rehabilitation Self-Assessment Checklist

You must complete this checklist before each video pulmonary rehab class.

#### Equipment to have ready:

- |  |           |          |           |
|--|-----------|----------|-----------|
| 1. I have my reliever inhaler to hand                  | Yes _____ | No _____ | N/A _____ |
| 2. I have my GTN spray/tablets to hand                 | Yes _____ | No _____ | N/A _____ |
| 3. I have a glass of drinking water ready              | Yes _____ | No _____ |           |
| 4. There is a sturdy chair against a wall              | Yes _____ | No _____ |           |
| 5. My telephone/tablet/computer is charged and working | Yes _____ | No _____ |           |

#### Environment:

- |   |           |          |
|---|-----------|----------|
| 1. The room is a comfortable temperature                  | Yes _____ | No _____ |
| 2. There is adequate lighting                             | Yes _____ | No _____ |
| 3. Trip hazards e.g. rugs, pets, children have been moved | Yes _____ | No _____ |

#### Other:

- |  |           |          |
|--|-----------|----------|
| 1. My able-bodied household member is within earshot         | Yes _____ | No _____ |
| 2. I have informed the team of any changes to my health      | Yes _____ | No _____ |
| 3. I have informed the team of any changes to my medications | Yes _____ | No _____ |
| 4. I have had a recent light meal or snack                   | Yes _____ | No _____ |
| 5. I am wearing appropriate clothing and flat shoes/trainers | Yes _____ | No _____ |

#### Symptoms:

It is your responsibility to monitor your symptoms and only exercise if you feel well enough.

You must check your symptoms before **each** class. You must not join in the class if you have a temperature, feel ill or become suddenly unwell.

If you have increased breathlessness, worsening symptoms or new/worsening joint pain prior to exercising you should not join the class for that session but return when the symptoms have settled.

You must stop exercising immediately if you experience any of the following:

- |               |                           |
|---------------|---------------------------|
| 1. Chest Pain | 4. Extreme Breathlessness |
| 2. Dizziness  | 5. Excessive Wheezing     |
| 3. Nausea     | 6. Coughing up blood      |

If there is any other reason you feel you should not exercise today, you must let the team know. Please call us on 01895 828851 or email [rbh-tr.harefieldpr@nhs.net](mailto:rbh-tr.harefieldpr@nhs.net) if you wish to speak to someone before the class.

Now please enjoy your class!

[www.rbht.nhs.uk](http://www.rbht.nhs.uk)



## Appendix 5: Example of Band 4 competencies and duties

### Virtual Pulmonary Rehab group

Competency 1:

The Band 4 is able to complete daily class management tasks relating to the organisation of Pulmonary Rehabilitation groups

Competency 2:

The Band 4 is able to contribute to the running of the Pulmonary Rehabilitation programme and assessment requirements

*Admin tasks:*

1. Monitor SystmOne work lists for tasks to be completed in VPR, awaiting venues and myCOPD, such tasks include sending Harefield & BLF packs, sending letters, sending Zoom class links or gathering objective outcomes
2. Send patient emails with attachments and/or links
3. Send secure emails to non-NHS accounts
4. Copy and paste emails to patient record on SystmOne
5. Send Zoom class links to patients
6. Set up a new Zoom class as requested
7. Know how to access Zoom, enter patients, enable video and microphone and end session
8. Session must be open 15mins prior to class starting to allow patients to access class
9. Assist patients to access Zoom class if having difficulties (How to use Zoom guide on VPR g-drive)
10. Keep class registers, SystmOne list and database up to date

*Preparation:*

11. Set up equipment in room for class including laptop, headset, Ethernet cable, connect to TV screen if available, position room and laptop to ensure full view of staff
12. Prepare, maintain and clean the equipment
13. Report any problems with equipment

*Delivering the group:*

14. Complete the patient register, record any planned UTA/DNA, education, and handover tab on Excel
15. Lead the warm up focussing on upper limb, lower limb movements and stretches. Focus on breathing control and positions of ease
16. Demonstrate the exercises using NAMSET principles and ensure patients know what times they're on
17. Correct the patient's form to ensure muscles are recruited properly
18. Can change exercises/adaptations for patients

*Evidence of exercise adaptation and repertoire*

19. Assist delivering the group e.g., music, timing, patient encouragement
20. Monitor patients and write down oxygen saturations/altered exercises as required so this can be transferred in SOAP notes
21. Write follow-up SOAP notes whilst the therapist is delivering education or within 24 hours

*Telephone Objective Assessment*

1. Complete consent and record sharing page – ensure understanding of electronic health care records, liaison with other MDT members, next of kin, permissions for communication
2. Complete Accessible Information tab regarding communication needs
3. Hospital Anxiety and Depression Scale (HAD) Highlight to the qualified therapist if any scores trigger further follow up (>10 for Anxiety/Depression)



scores). Transfer results onto front page. If triggering for a follow-up letter or discussion, this should be highlighted to the Physiotherapist in situ

4. COPD Assessment Tool (CAT) if COPD/Bronchiectasis patient on SystmOne
5. Kings brief interstitial lung disease (KBILD) complete on system 1 if ILD patient
6. Sit-to-stand in 1min (STS1M) send guide to patient or instruct on phone and complete on call
7. If complex – discuss with qualified staff
8. Select appropriate class and Email patient welcome email with class details and links

#### *Telephone Re-assessment*

1. Complete telephone reassessments
2. Reassessment to include questionnaires repeated from those on initial assessment, repeat STS1M and review goals and patient feedback from.
3. Can write re-assessment entries in SOAP notes and must be completed within 24 hours
4. Discuss long-term exercise options and maintenance participation
5. Complete and send referral form to maintenance class as appropriate or other referrals as required
6. Write basic reassessment discharge letter which must be sent within 1 week of reassessment
7. Seek support from qualified staff member if abnormal results or complex issues raised.

Discharges include database, education, register, maintenance referral, end referral

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