

Pulmonary Rehabilitation Remote Assessment

This document is intended to be used as a resource for pulmonary rehabilitation healthcare professionals conducting assessments remotely during the COVID-19 pandemic. Only resources available free of charge have been described. However we would strongly encourage you to continue to use outcome measures relevant to the National Asthma and COPD Audit Programme: Pulmonary Rehabilitation, if you have a license to use them e.g. Chronic Respiratory Questionnaire. We have highlighted in yellow the outcome measures collected in the audit. A full list of the audit outcome measures is available here: <https://www.rcplondon.ac.uk/projects/outputs/national-asthma-and-copd-audit-programme-nacap-pulmonary-rehabilitation-workstream>

Methods of remote assessment:

Important: Healthcare professionals should comply with their Trust's or organisation's clinical and information governance guidance when conducting assessments remotely.

- Attend Anywhere: <https://www.attendanywhere.org.uk/>
 - Your Trust must register to use this platform before services can use it
- Skype: <https://www.skype.com/en/>
 - Free to download and use
 - Useful for larger groups <https://www.skype.com/en/features/group-video-chat/>
- Microsoft Teams (replacing Skype for Business): <https://products.office.com/en-gb/microsoft-teams/group-chat-software>
 - Allows you host audio, video, and web conferences with anyone inside or outside your organization
 - 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)
- Skype for Business (being replaced with Microsoft Teams): <https://products.office.com/en-gb/skype-for-business/download-app>
 - *Useful for larger groups*
- 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

Assessment of physiological parameters:

- Measurement of physiological parameters e.g. blood pressure, heart-rate, peripheral oxygen help determine a person's safety to exercise from a cardiovascular and respiratory perspective.

- It is only possible to measure these parameters remotely if the person has access to specific measurement equipment (Tang et al, 2012).

Assessment of exercise capacity:

- The validity of remotely assessing exercise capacity has not been investigated in patients with chronic lung disease. However two studies involving people with cystic fibrosis and chronic heart failure have published data on this topic. These are:
 - Cox and colleagues investigated the validity of remote assessment of the three minute step test in 10 adults with cystic fibrosis (Cox et al, 2013). The test was performed twice: 1) with an assessor in the same room as the study participant and 2) with an assessor observing the study participant via videoconference. The results demonstrated that there were no significant differences in physiological parameters or patient comfort between the two types of assessment, but there was some difficulty in hearing the step count metronome with the videoconference method. This test requires a step of a specific height in the person's home.
 - Hwang and colleagues assessed the validity and reliability of the six minute walk test in 17 patients with chronic heart failure. (Hwang et al, 2017) They reported similar results between the face to face and videoconference assessments. However, although the confidence interval for the limits of agreement was almost equal to the minimal clinically important difference which may negate the utility of the test for remote assessment. Furthermore, to do this test there must be a 30-metre space, which is unlikely in most homes.

Assessment of muscle strength:

- The validity of remotely assessing muscle strength has not been investigated in patients with chronic lung disease. One study in people with chronic heart failure has been published.
- The aforementioned study by Hwang and colleagues also investigated grip strength measured using a hand-held dynamometer (Hwang et al, 2017) . The authors reported satisfactory validity and reliability a between face to face and videoconference assessment. This test requires access to a hand-held dynamometer.

Assessment of balance:

- The Falls Efficacy Scale–International (FES-I) (Yardley et al, 2005) is a 16-item self-reported questionnaire that evaluates concern about falling in a range of daily life and social activities, including going up and down stairs, cleaning the house and community walking with crowds. The level of concern is scored using a 4-point scale (1=not at all, 2=somewhat, 3=fairly, 4=very concerned). A study by Oliveira et al (2015) showed that people with COPD have a higher fear of falling compared to the healthy peers, which is related to lower quadriceps muscle strength, impaired balance, lower levels of physical activity and an increased fall risk.

Assessment of functional performance:

- The validity of remotely assessing functional performance has not been investigated in patients with chronic lung disease. One study in people with chronic heart failure has been published.

- The aforementioned study by Hwang and colleagues (2017) also investigated the Timed Up and Go (TUG) test. The authors reported satisfactory validity and reliability between face to face and videoconference assessment. This test requires access to a chair and walking course of specific height and length respectively.
- A number of self-reported measures of functional ability, which have been validated and are responsive to pulmonary rehabilitation are available:
 - Function domain of the Clinical COPD Questionnaire (COPD only): (Van der Molen et al, 2003) Questionnaire in research paper.
 - Modified Pulmonary Functional Status and Dyspnoea Questionnaire (COPD only). (Lareau et al, 1998) Request access to questionnaire: <https://qol.thoracic.org/sections/instruments/pt/pages/pfsdq.html>
 - Physical function domain of Short Form-36 (COPD, asthma, bronchiectasis, ILD). (Mahler & Mackowiak 1995) Access questionnaire: https://www.rand.org/health-care/surveys_tools/mos/36-item-short-form/survey-instrument.html
 - London Chest Activity of Daily Living (COPD only). (Garrod et al, 2000) Questionnaire in research paper.
 - Medical Research Council Dyspnoea Scale (chronic respiratory disease) (Kocks et al 2011). The person completing the scale must indicate the extent to which their breathlessness affects their mobility (rather than the assessor selecting the answer). Access questionnaire: <https://mrc.ukri.org/research/facilities-and-resources-for-researchers/mrc-scales/mrc-dyspnoea-scale-mrc-breathlessness-scale/>
 - Baseline and Transitional Dyspnoea Indexes (COPD only) (Mahler et al, 2004). Request to access: <https://eprovide.mapi-trust.org/instruments/baseline-and-transition-dyspnea-indexes>.

Assessment of breathlessness:

- A number of self-reported measures of breathlessness which have been validated and are responsive to pulmonary rehabilitation are available:
 - **Medical Research Council Dyspnoea Scale** (Kocks et al 2011). The person completing the scale must indicate the extent to which their breathlessness affects their mobility (rather than the assessor selecting the answer). Access questionnaire: <https://mrc.ukri.org/research/facilities-and-resources-for-researchers/mrc-scales/mrc-dyspnoea-scale-mrc-breathlessness-scale/>
 - Dyspnoea-12 (COPD, ILD, asthma, bronchiectasis, lung cancer) (Yorke et al, 2010). Access questionnaire: <https://toolkit.severeasthma.org.au/wp-content/uploads/sites/2/2018/03/Dyspnoea12Questionnaire.pdf>
 - Breathlessness domain of King's Brief Interstitial Lung Disease questionnaire (Patel et al, 2012). Request access to questionnaire: kbildenquiries@gmail.com

Assessment of health-related quality of life:

- A number of self-reported measures of health-related quality of life, which have been validated and are responsive to pulmonary rehabilitation are available:
 - **COPD Assessment Test** (COPD only) (Jones et al, 2009). Access questionnaire: <https://www.catestonline.org/patient-site-test-page-english.html>
 - St George's Respiratory Questionnaire (COPD, asthma, bronchiectasis) (Jones et al, 1992). Access questionnaire: <http://www.healthstatus.sgul.ac.uk/sgrq/sgrq-downloads>
 - SGRQ-C (COPD specific) (Meguro et al 2007). Access questionnaire: <http://www.healthstatus.sgul.ac.uk/sgrq-c>
 - SGRQ-I (Idiopathic Pulmonary Fibrosis specific) (Swigris et al, 2017). Request access: sgrq@sgul.ac.uk
 - Clinical COPD Questionnaire (COPD only): (Van der Molen et al, 2003) Questionnaire in research paper.
 - Euro Qol – 5 Dimensions – 5 Levels (EQ5D5L) (Herdman et al, 2011). Validated and responsive to PR in COPD population (Nolan et al 2016). Request to access: <https://euroqol.org/support/how-to-obtain-eq-5d/>
 - King's Brief Interstitial Lung Disease questionnaire (Patel et al, 2012). Request access: kbildenquiries@gmail.com

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Disclaimer: Advice has been based on PHE advice where available and expert opinion where not available. Variations to this advice may be required depending on clinical setting and individual patients. This guidance is issued to specialist respiratory teams working in the community setting. It is not designed to cover secondary care or primary care settings, where guidance is being issued by PHE.