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EPS1.03
Recommended shielding against COVID-19 impacts physical activity levels and adherence to airway clearance therapy in patients with cystic fibrosis
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Background: Physical activity and physiotherapy are recommended as components of the cystic fibrosis (CF) treatment regimen.

Objectives: To assess the impact of the lockdown during the second wave of the COVID-19 pandemic on daily airway clearance and physical activity levels among patients with CF.

Methods: A telephone-based survey on adherence to physiotherapy and physical exercise was conducted among CF patients attending our CF Unit during the “second wave of the pandemic” (November 2020–January 2021).

Results: A total of 120 patients were included, mean (StDev) age 13.8 (8.1) years, mean baseline FEV1 101.0 (24.7) %. Before the lockdown, 79.5% of the patients reported performing physiotherapy regularly, 8.2% reported performing physiotherapy 1–4 times per week, and 12.3% of the patients reported performing no physiotherapy at all. Most of the CF patients (69%) did not change the frequency of their daily physiotherapy practice during the COVID-19 pandemic. Moreover, 49.2% of the CF patients performed assisted airway clearance by having a physiotherapist visiting their home once a week through a home care program. Only 6.3% of them increased, 33.7% stopped, and 60% did not change the frequency of assisted physiotherapy during the study period. Concerning physical exercise, before the COVID-19 pandemic, 81% of the CF patients reported performing regular exercise. During the quarantine period, 58.4% of the patients needed to change the type of exercise, while 29% reported increasing the frequency, and 48% performed less exercise than before.

Conclusions: Strict lockdown measures affected patients’ physical activity levels and their daily airway clearance practice. It is of vital importance to monitor CF patients and give incentives to maintain/increase the adherence to exercise and physiotherapy during such difficult circumstances.

EPS1.04
Audit of virtual exercise class during COVID-19 in children with cystic fibrosis
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The UK CF Trust Physiotherapy Standards of Care document (2020) advocates that physical activity & exercise should be part of the routine management for people with cystic fibrosis (pwCF) at any age for health & quality of life (QOL). During the COVID-19 pandemic we were unable to offer face to face exercise classes in the community. Weekly virtual group exercise sessions were offered in place of this.

Objectives: To implement a virtual exercise class including children with CF during COVID-19 and audit any cost & time savings.

Methods: From a cohort of >150, 25 children were identified as requiring additional support to engage with exercise. 13 children accepted the offer of classes. A two-way interactive session was initiated where the physiotherapist provided specialist advice, monitoring & prompting, thereby enhancing engagement in the classes. Classes ran once weekly for 6 weeks. The regular format of the class was high intensity interval training (HIIT). The class attendees were all asked to consent to being seen on screen by the physio & the other class attendees, with parental/carer supervision within the home. General advice around pacing of activity & hydration was provided in addition to more specific advice to those where needed.

Results: 100% of participants reported the classes to be beneficial. They were attended by children with a wide variety of baseline exercise levels (<1 hour to >4 hours/week). Length, intensity and enjoyment of the classes were described as ‘excellent’. 100% of responding attendees would recommend the classes to other families.

Conclusions: Children attending the classes found them beneficial. Virtual classes were both time and cost-effective. A downward trend of attendance was noticed when schools reopened and shielding eased.

EPS1.05
Evaluating impacts of the change from clinic to home spirometry on clinicians and adults with cystic fibrosis
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Background: During the COVID-19 pandemic, people with cystic fibrosis (pwCF) were advised to shield. A national scheme supported purchase of spirometers enabling pwCF to do home spirometry to support virtual clinics. PWCF attending the York Hull adult CF centre (YHACF) were provided with NuvoAir spirometers.

Objectives: To evaluate how the change from clinic to home spirometry impacted on the experiences of pwCF & clinicians, focusing on anxiety levels & use of time.

Methods: Online questionnaires were sent to pwCF & clinicians at YHACF. Mock scenarios established potential differences in time taken for home spirometry (HS) & clinic spirometry (CS).

Results: 28/70 pwCF & 8/15 clinicians responded. PwCF & clinicians were confident that pwCF could use HS. Frequently used words for both groups were “quick,” “convenient” & “easy” when describing HS. When describing CS, “expertise” & “helpful” featured for pwCF and “time,” “stressful” & “accurate” for clinicians. PwCF reported the main benefit of CS was regular contact with clinicians. 62.5% of clinicians agreed that the change to HS gave better time efficiency & 87.5% agreed clinic flow was more efficient with HS. Timed scenarios indicated 7½ minutes per test saved with HS. Most clinicians believed pwCF are anxious with spirometry, 50% linking anxiety to the clinic setting. Most pwCF reported never being anxious about HS or CS. Only 4% reported anxiety with CS; however, when describing HS, the words “anxious” & “worry” were used frequently. The preference for 82% of pwCF for future care was access to a combination of spirometry in the home & clinic.

Conclusion:
- Home spirometry saved time for pwCF & clinicians.
- Virtual technology has an important & developing role in the care of pwCF but relationships remain valued.
- Style of questioning affects response from pwCF about spirometry anxiety.
- Disparity between pwCF reported anxiety & clinicians’ perceptions of anxiety needs further investigation.

EPS1.06
A retrospective audit of home-based spirometry quality in a large UK adult cystic fibrosis centre
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Objectives: Spirometry measurement is the gold standard for assessing disease severity in cystic fibrosis (CF). Poor-quality spirometry tests can
result in inaccurate measurement of FEV₁ and FVC. Manchester Adult CF Centre has transformed from hospital to home-based spirometry testing during COVID-19. Unlike hospital-based spirometry, home-based spirometry relies entirely on the subject to obtain good quality spirometry. Therefore, we sought to ascertain the quality of home-based spirometry and the test errors in our patients.

**Methods:** A convenience sample of adults with CF attending Manchester Adult CF Centre were provided with a NuvoAir home-based spirometer to perform routine lung function between March–October 2020. NuvoAir respiratory platform consists of a mobile phone application, Bluetooth spirometer and an online results portal. The spirometer also provides feedback to patients' spirometry quality. Initial patient set-up was performed in-hospital or virtually with a member of the CF clinical team. All patient sessions were included irrespective of quality of spirometry test session. Acceptability and repeatability criteria were applied as per NuvoAir software in line with ATS/ERS guidelines, along with assigning a quality grading A–F. According to ATS/ERS standardised pulmonary function report criteria at time of testing.

**Results:** 66 CF patients (32 female) mean age 31.3 (18–55) performed 343 spirometry sessions totaling 1,041 individual spirometry tests with a NuvoAir device were graded as follows: Grade A = 30.3%, Grade B = 36.2%, Grade C = 3.5%, Grade D = 2.6%, Grade E = 16.6%, Grade F = 10.8%. Further analysis of all 1,041 tests for common errors indicated BX – Back extrapolation 2%, TP – Time to Peak (slow start) 14.6%, CO – Cough 1.4%, ET – Early termination 0.5%, CE – Cessation or glottic closure 12.9%. Overall, general tests A–C considered usable was 70%.

**Conclusion:** The results show good-quality standards can be achieved through home-based spirometry.

**EPS1.07**

**Impact of COVID-19 on cystic fibrosis physiotherapy outpatient clinics**

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**Introduction:** At the advent of the COVID-19 pandemic in the UK in March 2020, people with cystic fibrosis (pwCF) were placed in the ‘extremely vulnerable’ category and we cancelled all routine face-to-face clinic appointments.

We commenced virtual reviews as an innovative way of offering the service at our large adult CF centre (350 pwCF), and maintained this for most pwCF when shielding ended in August 2020.

We now report on the initial impact of this system on patient engagement with physiotherapy.

**Method:** We compared outpatient clinic contacts pre-COVID (01/01/2020–17/03/2020) with remote contacts during shielding (18/3/20–31/7/20) and also when shielding had ended (up to 30/9/20), specifically looking at physiotherapy input.

**Results:** Pre-COVID, there were 324 face-to-face clinic visits, where 244 pwCF (75%) accessed a physiotherapist, 9 (3%) declined review, and in 71 (22%) cases it was not offered due to lack of capacity. During shielding, in 424 virtual clinics, 352 pwCF (83%) accessed a physiotherapist, 64 (15%) declined/did not access physio, and 10 (2%) were not offered review. Once shielding ended, in 281 virtual clinics, 234 pwCF (83%) accessed physio review, 45 (16%) declined/did not access review and 7 (3%) were not offered review.

**Conclusion:** We found virtual clinics during the COVID pandemic a useful way of providing physiotherapy review for our pwCF, and indeed it helped improve capacity. The increased capacity and uptake after shielding ended suggests preference by pwCF for reviews in this way.

**EPS1.08**

**Exercising online a “Beaming” good initiative**

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**Objective:** Evaluating the impact of 6 weeks of LIVE online exercise classes in the West of Scotland Adult CF Unit using the Beam platform for people with cystic fibrosis (pwCF).

**Methods:** 63 pwCF enrolled for the classes via Beam. In addition, questionnaires were completed prior to and during shielding to establish motivation and personal objectives with exercise allowing therapists to structure sessions. 28 exercise and 12 education sessions focussing on the health and well-being of the pwCF were delivered. Exercises were adapted to all abilities through a variety of activities eg. yoga, strength and conditioning (S&C), easy exercise and high intensity interval training (HIIT).

**Results:** 26 pwCF attended for 1 or more exercise sessions and 37 attended education sessions.

Due to CF cross-infection limitations existing prior to COVID-19, group sessions were previously prohibited. These virtual classes allowed us to be 5× more time efficient with exercise and 12× more efficient when delivering education in a group setting than if they were delivered face-to-face.

The post pilot questionnaire showed 64% were exercising on BEAM with their CF physio. The greatest uptake was HIIT (82%) followed by S&C (45%) with other options being equivocal. Motivation (measured using a VAS) increased from 5.75 (SD 2.67) pre-pilot to 7.18 (SD 2.36) post p = 0.189. Levels of perceived fitness also increased from 4.12 to 5.9 post-pilot p = 0.62. Personal fitness goals were fully achieved or partially achieved by 91% of respondents and when asked comments were very positive: “This has been fantastic, especially during a difficult mental and very limiting physical lockdown period.”

**Conclusion:** The implementation of BEAM Live online exercises for pwCF was found to be a satisfactory and convenient way to deliver exercising allowing for optimisation and progression of pwCF perceived exercise tolerance and motivation towards exercise. The sample size was small which may account for the lack of statistical significance.

**EPS1.09**

**Adapting services during the COVID-19 pandemic – a patient evaluation of physiotherapy telephone reviews within multidisciplinary team virtual clinics**

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**Background:** The COVID-19 pandemic forced the evolution of face-to-face cystic fibrosis (CF) multidisciplinary team (MDT) clinics into an entirely remote service. Our virtual clinics included telephone reviews with specialist physiotherapists.

**Aims:** To understand the experiences of our People with CF (pwCF) during their physiotherapy telephone review; to support the collaborative development of our service.

**Methods:** Patient representatives assisted in the development of a user-friendly questionnaire. With patient consent, the questionnaire was distributed via email to patients attending clinics between 28th August–25th September 2020.

**Results:** Of the 142 patients who consented to receiving a questionnaire, 61 (43%) responded. 90% (n = 55) of pwCF were satisfied with their telephone physiotherapy review. 33% (n = 20) of pwCF were not aware they would be called by a physiotherapist. 93% (n = 57) of pwCF found it useful to speak to a physiotherapist, covering the ‘same (topics) as a face-to-face review.’

When stable, some felt a review was not required. pwCF felt good aspects of their review included discussing physiotherapy-related concerns (18%, n = 11) and gaining specialist advice (26%, n = 16). The main area for improvement was providing an allocated appointment time (33%, n = 20). Patient preference for time of call was 26% (n = 16) morning; 26% (n = 16) afternoon; 49% (n = 29) said call anytime.

**Conclusions:** Feedback was positive for the new entirely remote clinic service. The service now allocates time slots to improve the user experience. Continuing to develop this service with user feedback is an ongoing priority as virtual services will be at the forefront of future CF care.