Journal of the Association of Chartered Physiotherapists in Respiratory Care

Volume 53 • Issue 1 • 2021 • Supplement

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A physiotherapy-led early mobilisation protocol for neurosurgical patients with external ventricular drains in intensive care: A service evaluation

Yi Fang Tan[1,2], Charlotte Pereira[2,3] and Harriet Shannon[2]

Abstract

Background

An external ventricular drain (EVD) is used to reduce intracranial pressure in neurosurgical patients, and remains in place for an average of 8 days post-surgery. The presence of an EVD poses a major barrier to early mobilisation due to safety concerns. Eligibility criteria published in EVD mobilisation protocols only consisted of exclusion criteria and parameters related to the neurological system (Moyer et al. 2017; Young et al. 2019). The parameters pertaining to cardiovascular, respiratory and musculoskeletal systems deemed safe for mobilisation were not stated.

Aims

To determine the safety, feasibility and effectiveness of implementing an early mobilisation protocol, which included physiological parameters, in patients with EVDs.

Methods

A retrospective service evaluation was conducted in a neurological intensive care unit. Medical records were reviewed for 2 periods from October 2017 to March 2018 (pre-protocol period) and October 2019 to March 2020 (protocol period).

Results

The results for the pre-protocol and protocol periods are shown in Table 1.

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Table 1: Safety, feasibility and effectiveness of the early mobilisation protocol

	Pre-protocol (n = 75)	Protocol (n = 42)	Difference with 95% CI (Protocol, Pre-protocol), p-value
Patients eligible for mobilisation, n	25	16	
Eligible patients mobilised, n (%)[1]	1 (4%)	11 (68.8%)	64.8%, 95% CI (35.9%, 82.1%), p <0.0001***
Total number of therapy sessions	1	21	
Number of adverse events	Information not available	0	
Time from EVD placement to first mobilisation in the hospital (days)[2]	14.0 (9.5–18.0) +	3.5 (2.0–7.0) +	<0.0001***
ICU LOS (days)[2]	8.0 (4.0–10.0) +	3.5 (2.0–9.0) +	0.037***
Hospital LOS (days)[2]	38.0 (24.5–54.5) +	22.5 (17.8–39.0) +	0.030***

CI = confidence interval; EVD = external ventricular drain; ICU = intensive care unit; LOS = length of stay. ***Level of significance p <0.05. [1]Fisher's exact test. [2]Mann-Whitney U test. + = median (25th–75th percentile)

After protocol implementation, there was a 64.8% increase in the proportion of patients with EVDs mobilised (95%CI, 35.9–82.1%, p <0.0001). Median time from EVD placement to first mobilisation decreased from 14 to 3.5 days (p <0.0001). Moreover, the median intensive care and hospital length of stays were significantly reduced from 8 to 3.5 days (p = 0.037) and 38 to 22.5 days (p = 0.030) respectively. No adverse events were recorded in the protocol period.

Conclusions

The early mobilisation protocol for patients with EVDs enables safe, feasible and effective mobilisation. Future research with a larger, prospective study is warranted.

Differences in presentation and severity of symptoms by referral source: An evaluation of COVID-19 follow-up clinics

Kristine Hunt[1], Olivia King[1], Charlotte Massey[2], Toby Hillman[1], Melissa Heightman[1], Gita Ramdharry[2,3] and Rebecca Livingston[1]

Abstract

Introduction

NICE guidance recommends multidisciplinary (MDT) support of patients with ongoing symptoms of COVID-19, termed *post-COVID syndrome*. The UCLH post COVID-19 clinic opened in May 2020 to provide MDT assessment and management of this cohort.

Aims and objectives

Ascertain differences in symptom severity for COVID-19 patients by their referral source: critical care (ITU), Respiratory HDU (CPAP), ward, emergency department (ED) and GP.

Methods

Data were collected by the clinic MDT. Symptom severity was assessed using the following measures: Fatigue assessment scale (FAS), Dyspnoea 12-(D12), 1-minute sit-to-stand test with BORG dyspnoea scale, anxiety (GAD2), depression (PHQ2). Brompton breathing pattern assessment tool (BPAT) measured abnormalities in breathing pattern.

Results

Data from 320 patients (180 male and 140 female) were collected from May 2020–August 2020. Mean age of patients was 50.99 (*SD* 13.75). The most common referral source was ED (37.4%), followed by ward (19%), GP (15.6%), CPAP (14.6%) and ITU (13.1%). A significant difference in age was observed across the referral groups with older people referred from the ward/CPAP unit and younger people from GP referrals (ANOVA: $F = 10.35$, $p < 0.0001$).

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Fatigue and breathlessness were significantly lower in the ITU cohort compared to the other four groups (FAS: $z = 15.702$, $p = 0.004$; D-12: $z = 15.132$, $p = 0.004$). More people in the GP/ED groups reached the threshold for breathing pattern abnormality (BPAT ≥4); and the 3 inpatient groups experienced oxygen desaturation ($\chi^2 = 34.49$, $p < 0.0001$). No differences were observed across groups in anxiety and depression.

Conclusion

Differences in symptoms were observed across referral groups indicating possible differing pathophysiology of presentation.

Evaluation of the effectiveness of an outpatient rehabilitation course for patients previously hospitalised with COVID-19

Laura Moth[1], Hannah Cumming[1], Lynn McDonnell[1], Amy Dewar and Lauren Hogg[1]

Abstract

Introduction

COVID-19 can result in persistent symptoms beyond resolution of acute illness. Rehabilitation courses known to be effective in respiratory or cardiac disease may aid recovery.

Aim

To explore if a 6 week supervised rehabilitation course improves patient symptoms and function post COVID-19.

Method

Patients were assessed pre and post a bi-weekly course using: Incremental Shuttle Walk Test (ISWT); 1 minute sit to stand test (1 min STS); quadriceps strength, MRC breathlessness, Functional Assessment of Chronic Illness Therapy – Fatigue scale (FACIT), EQ5D5L-UL and VAS, GAD-7 and PHQ-9. Progressive aerobic and resistance exercise was combined with education. Changes in outcomes are reported as mean (± *SD*). Paired *t*-tests assessed within subject change. Per protocol analysis was defined by completion of ≥75% planned sessions.

Results

13 patients enrolled, 10 completed (77%): age 57 ± 13.6, 6 male, length of hospital stay 36.1 days (± 38.1), days from discharge to enrolment 153.2 (± 38.7). Improvements were seen in ISWT (139 ± 152.6m; $p = 0.018$), 1 min STS (6.0 ± 4.4; $p = 0.001$) and MRC (-0.6 ± 0.5; $p = 0.005$).

Conclusion

These findings show a supervised rehabilitation course can improve exercise capacity, lower limb function and breathlessness in patients with persistent symptoms post COVID-19. Despite no overall change in fatigue, over half of patients demonstrated improvement in this domain.

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Further study is warranted to explore how best to deliver rehabilitation to impact the long term impairments seen with this novel disease.

An evaluation of the remote physiotherapy service provided to National Aspergillosis Centre (NAC) patients

Kimberley Driver[1] and Philip J Langridge[1]

Abstract

Background

Following the COVID-19 pandemic, the physiotherapy team were required to adapt to changes in the way patients access the NAC service and the different referral methods to physiotherapy. Weekly face-to-face appointments were restricted with most medical contacts being via Attend Anywhere or telephone. Rather than provide a response service to clinics, the physiotherapy team now mainly receive referrals via email with the number of face-to-face reviews in clinic now significantly reduced.

Aims and objectives

To evaluate patient perception of the remote services provided to inform ongoing service delivery.

Method

Patients were sent a SurveyMonkey® link via email which the patient could complete in their own time. This survey was anonymous and took approximately 6 minutes to complete. Responses were collated and analysed.

Results

11 of 20 eligible patients responded. 4 of 11 had not seen a physiotherapist previously. All made positive comments when asked what was good about their consultation such as *useful information*, *clear advice* and *condition specific*. 100% benefitted *a lot* from their appointment and 73% would opt for a virtual or telephone appointment in the future, citing distance or shielding as the main reasons for this. All 11 received additional resources in the form of video links or leaflets which were deemed very (64%) or extremely (36%) useful. 82% understood all and 18% understood most of the information provided.

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Conclusions

All patients surveyed found remote physiotherapy consultations and the resources provided useful and would opt for a remote consultation in future.

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An exploratory survey of maintenance option preferences for post-pulmonary rehabilitation (PR) patients with chronic respiratory disease (CRD)

Khaled Alqahtani[1,2,3], Linzy Houchen-Wolloff[2,3] and Sally Singh[2,3]

Abstract

Background and objectives

Maintenance strategies following PR is recommended (Bolton et al. 2014). However, the best approach has still not been effectively defined (Beauchamp et al. 2013). Patient involvement in co-designing maintenance programmes is scarce and the objective, therefore, was to explore the preferences of patients with CRD on maintenance options following PR.

Methods

A paper-based short survey was distributed to patients who had completed a 6-week out-patient PR. Patients were included if they had a diagnosis of CRD. The questions were a mix of open-ended and tick-all-that-apply questions. Data were analysed descriptively, and the tick-all-that-apply questions were analysed using cross tabulation analysis.

Results

45 out of 50 participants with mean ± *SD* age of 67.4 ± 10.1 years returned the survey. The majority of participants *n* = 37 (82%) expressed an interest in enrolling in a maintenance programme if one were available. Figure 1 shows the maintenance options that would appear helpful to patients if used following PR.

Figure 2 represents the aspects PR patients would like to maintain.

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Question: Which of the following options would seem helpful to you after the programme and could be used as a maintenance option?

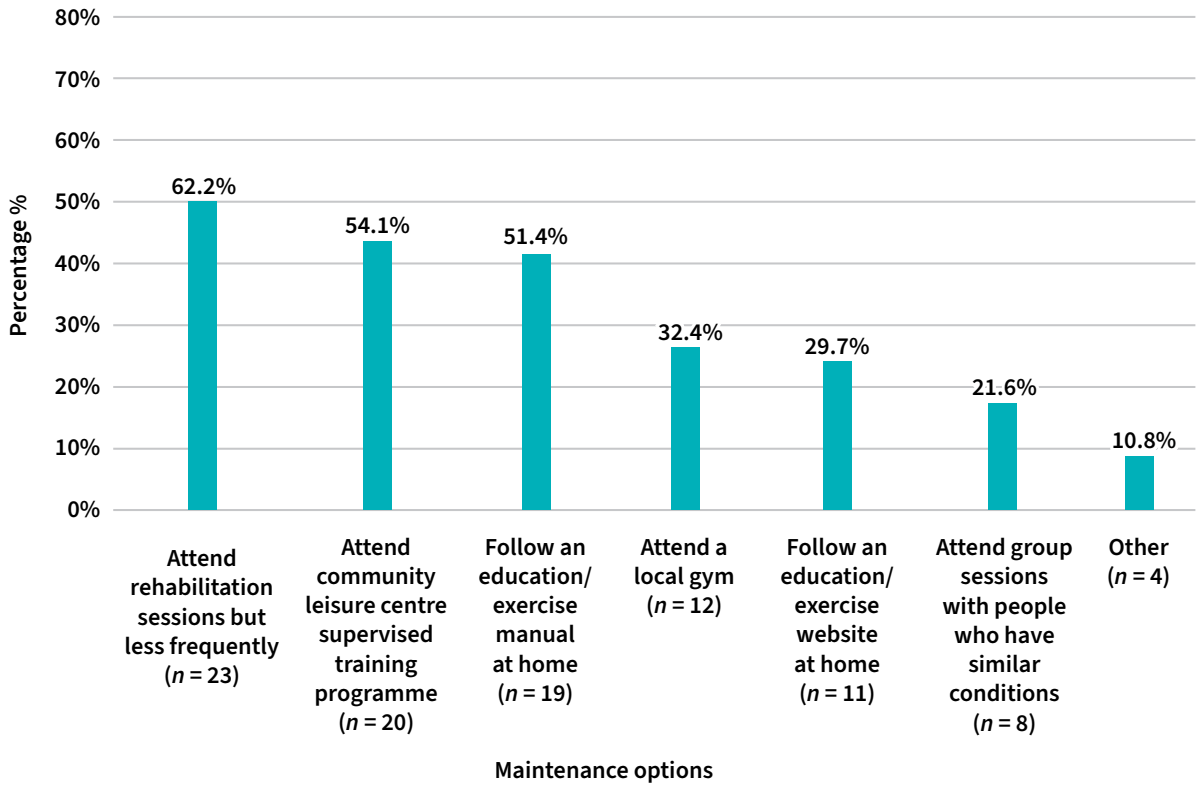

Figure 1: Maintenance options that would appear helpful to patients if used following PR

Question: What is the most important aspect of pulmonary rehabilitation that you would like to maintain?

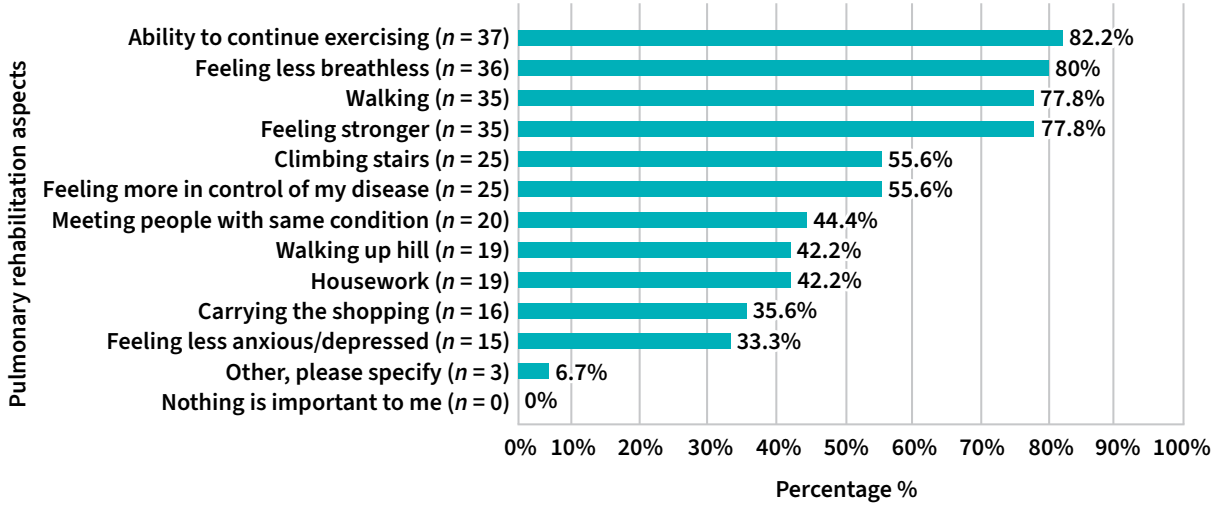

Figure 2: Aspects of pulmonary rehabilitation that patients wish to maintain

Conclusion

Many participants were interested in maintaining the benefits of PR following graduation. The various modes of maintenance in which delivery options were selected indicates that efforts should be made to make maintenance options available in various modes to meet patient demand considering the resource implications this may have. The survey sample size is, however, rather limited and the findings cannot therefore be generalised. Also limited to those able to complete the PR programme and therefore did not capture drop outs.

References

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A review of the effectiveness of a blunt chest trauma coordinator enforcing the implementation of chest trauma pathway in patients with blunt chest trauma

Sanant Evans[1], Luke Newey[1] and Ceri Battle[1]

Abstract

Introduction

The impact of structured, evidence-based care pathways for the management of patients with blunt chest trauma have yet to be proven in clinical practice. The aim of this trial was to assess the effectiveness of a new blunt chest trauma care pathway and coordinator ensuring the implementation and compliance in clinical practice.

A physiotherapist acted as a coordinator for the MDT compromising of surgeon, anaesthetist, pain team and other AHP clinicians. The coordinator screened 30 patients admitted to Morriston hospital with BCT (post-implementation group). Demographics and outcomes including ICU admissions, length of stay, mortality and onset of new pulmonary complications were collected and compared to data collected before the introduction of the pathway (pre-implementation group).

In the post-implementation group, the mean patient age was 66 years, compared to 59 years in the pre-implementation. Median number of rib fractures was four in both pre and post implementation groups. There was a positive relationship between the chest trauma pathway compliance and patient outcomes. With the introduction of the pathway, a decrease in ICU admissions by 31% was reported. There was also a 29% decrease in onset of new pulmonary complications and length of stay decreased by one day in the post-implementation group. Mortality rate remained unchanged.

The findings of the review suggest that better outcomes are achieved through the implementation of a blunt chest trauma pathway, coordinated by a physiotherapist, despite the same injury severity and the patients being older post-implementation.

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Did physiotherapy staff feel prepared to work during a pandemic? A questionnaire evaluation of the views of physiotherapists in an acute hospital trust

Amy Parkes[1,2], Helen J Gooch[1], Catherine Edwards[1], Ambreen Chohan[2]

Abstract

Introduction

In response to the SARS-CoV-2 pandemic the physiotherapy service in an acute hospital underwent rapid transformation in three key ways: redeployment of staff, changes to working patterns, and development of remote consultations.

Aim

The project aimed to explore whether staff felt adequately prepared and supported to respond to this transformation and complete their pandemic roles during the initial pandemic period.

Methods

Qualified physiotherapists were invited to participate in an anonymised electronic questionnaire (JISC, UK) providing both quantitative and qualitative data. Following Service evaluation approval at the trust, ethical approval was granted by the University Health Ethics Review Panel.

Results

The questionnaire was sent out to 105 physiotherapists with 43 responses (41%). 91% of participants experienced change in their role. 93% of participants accessed additional training and the greatest source of support (79% of participants) was from peers. Training and support focused on clinical skills with some identifying that wellbeing was overlooked. 86% of participants felt communication was good, with daily briefings highlighted as important whilst 56% reported acceptable involvement in decision making regarding the service transformations. 85% of participants felt able to meet the needs of their caseload with 76% feeling confident in their role.

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Conclusion

The departmental approach adopted towards the initial pandemic response was mostly well received. The project identified actions for second wave planning around communication, training and wellbeing. Findings are specific to the department evaluated, however these 3 key actions are an important consideration to ensure an effective pandemic workforce and protect staff wellbeing.

Does virtual breathing pattern retraining improve breathlessness in patients with post COVID syndrome?

Lauren Williamson[1], Gita Ramdharry[2,3], Olivia Chapman[1], Melissa Heightman[4], Toby Hillman[4] and Rebecca Livingston[1,4]

Abstract

Introduction

British Thoracic Society (BTS) guidelines recommend assessment of breathing pattern disorder (BPD) for ongoing breathlessness post COVID-19 infection. Breathing pattern retraining (BPR) has been shown to improve breathlessness arising from BPD.

Aim

1 Ascertain percentage of people with BPD in a post-COVID-19 clinic cohort.
2 To determine if virtual BPR improves breathlessness in patients with BPD following COVID-19 infection.

Method

Data was collected from patients completing a systematic MDT assessment in a post-COVID clinic. Breathlessness (Dyspnoea 12- D12) and breathing pattern (Brompton Breathing Pattern Assessment Tool – BPAT) were assessed by the clinic physiotherapist and on completion of BPR. Those with MDT diagnosis of BPD were referred for physiotherapy led virtual BPR. A Wilcoxon sign rank test was used to compare pre and post treatment data. The effect sizes were presented as a Hedge's G statistic. Effect sizes are classified as: small > 0.2; moderate > 0.5; large > 0.8.

Results

1 55 of 293 patients were diagnosed with BPD (18.8%).
2 Data for 17 patients who completed virtual BPR were analysed. Mean number of days since symptoms onset was 61.88 (*SD* 19.72). Patients completed a mean of 3.74 (*SD* 1.19) BPR sessions.

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3 Improvement in D12 was statistically significant (median pre 18, post 5, (z = -3.62, p = 0.000)). The effect size was large: Hedge's g = 1.84.

4 Improvement in BPAT was statistically significant (median BPAT pre 4 post 1, (z = -3.66, p = 0.000)). The effect size was large: Hedge's g = 3.19.

Conclusion

BPD is prevalent post COVID-19. Virtual BPR improves breathing pattern and breathlessness.

Severity of COVID-19 and implications on early rehabilitation in intensive care: An observational study

Stefania Spiliopoulou[1], Eleanor Douglas[1,2] Theresa Harvey-Dunstan[2]

Abstract

Introduction

Patients with severe COVID-19 pneumonitis who require invasive mechanical ventilation (IMV), proning or neuromuscular blocking agents (NMBAs) may have delays in reaching rehabilitation milestones. No empirical research exists to confirm these relationships. This study explored the effects of these ventilatory requirements on the achievement of rehabilitation milestones for patients admitted to intensive care (ICU) with COVID-19 pneumonitis.

Methods

A retrospective observational study was completed over 4 months. Rehabilitation milestones were measured as days since ICU admission to sit out of bed (SOOB), sit on the edge of the bed (SOEOB) and stand, in relation to their ventilatory requirements.

Results

109 patients aged 56 ± 13 were admitted to ICU with COVID-19 pneumonitis. 78 people survived, of which 78% (n = 61) required IMV, 54% (n = 42) required NMBAs and 25% were proned. It took 16 (IQR: 13) days to SOOB, 14 (IQR: 12) days to SOEOB and 15 (IQR: 18) days to stand. Patients requiring NMBAs took more than twice as long to achieve these milestones compared to those that did not (p <0.001); proned patients took 3 days longer to SOEOB (p = 0.021). Strong positive correlations were seen between days of IMV and time to achieve rehabilitation milestones (r = 0.66–0.86; p <0.001).

Conclusions

Positive relationships between the use of NMBAs, prolonged IMV, proning and delayed rehabilitation outcomes

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was observed. As these variables may double the time for rehabilitation milestones to be achieved, this highlights the importance of robust ICU physiotherapy services, including follow-up after ICU discharge.

Tracheostomy weaning in patients with COVID-19: Clinical observation from a large London teaching hospital

Rebecca Davies[1], Lucy Lloyd[1], Cheryl Terrington[1] and Charles Reilly[1,2]

Abstract

Background

Clinical features of COVID-19 have seen increasing requirements for prolonged periods of mechanical ventilation and subsequent tracheostomy insertion.

Aim

To describe the weaning duration and incidence of tracheostomy complications in adult patients with COVID-19.

Method

This was a retrospective, observational cohort study of critical care patients admitted with COVID-19 that required a tracheostomy. Data extracted included: tracheostomy insertion date, duration of weaning, time to decannulation and tracheostomy complications. Data were extracted using the IntelliSpace Critical Care and Anaesthesia Information System (Philips Healthcare, Murraysville, USA) between 1st March 2020 and 30th June 2020.

Results

61 tracheostomy patients were reviewed. 5 were excluded due to incomplete data sets and 12 (21%) died prior to commencing weaning.

For the remaining 44 patients the median (range) time between intubation and tracheostomy insertion was 17 (4–25) days. The time from tracheostomy insertion to ventilator liberation was 18 (3–64) days. Decannulation occurred 30 (10–67) days post insertion.

Tracheostomy complications were reported in 8 patients (18%). These included; tracheomalacia (n = 1; 13%), airway oedema (n = 2; 25%), tracheal ulceration (n = 1; 13%), haemoptysis (n = 6; 75%), bleeding from tracheostomy site (n = 1; 13%).

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Conclusion

Our findings reveal the median time from tracheostomy insertion to removal was 30 days. We must acknowledge the variation in the range, for example, 3–64, most likely reflective of the complexity of these patients. The instance of tracheostomy complications was infrequent. Comparison of these data to other centres would be of benefit, to evaluate tracheostomy management in patients with COVID-19 and inform future clinical practice.

Using remote simulation as an educational modality to develop undergraduate physiotherapy students' skills in assessing the acutely ill patient

Laura Evans[1], Eleanor Douglas[2], Fiona Moffatt[2] and Theresa Harvey-Dunstan[2]

Abstract

Introduction

Final year undergraduate physiotherapy students are given the opportunity to participate in a face-to-face simulation training session to build on their clinical experience prior to qualification. The session aims to improve confidence and competence when assessing and managing an acutely ill patient. Face-to-face training was prohibited in the first COVID-19 lockdown, so the simulation training was adapted to remote delivery.

Summary of work

17 physiotherapy students participated in a remote simulation session using Microsoft Teams. Groups of 6 students undertook 2 scenarios that required them to assess and initiate the management of an acutely ill patient using the A–E toolkit. Each simulation was followed by a faculty led debrief.

Students were asked to rate their self-reported confidence using a 5-point Likert Scale in relation to 11 statements pre and post simulation. Students were also given the opportunity to give free text responses. A focus group investigated the students' perceptions of remote simulation as an educational modality.

Results

Comparison of pre and post simulation quantitative data showed significant improvements in all areas of self-reported confidence. Students' free text responses identified themes of improved confidence in applying the A–E toolkit and in their own decision making.

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3 themes emerged from the focus group discussion. Firstly, learning in a safe environment, secondly the value of observing peers, and thirdly confidence when assessing and managing an acutely ill patient.

Conclusion

Remote simulation was feasible and acceptable. It demonstrated an increase in students' self-reported confidence in both quantitative and qualitative data. Further work is needed to investigate if remote simulation gives comparable outcomes to face-to-face.

1st place

Measuring physical activity levels in critical care: A feasibility study

Laura M Jones[1,2], Ema Swingwood[3,4] and Harriet Shannon[1]

Abstract

Background

Rehabilitation of patients recovering from critical illness has been a focus of both clinical practice and research. Heterogeneity exists in the measurement of physical recovery, which is important given the variable recovery trajectory amongst the patient population. Wearable technology offers a simple, unobtrusive method of continuous activity monitoring. Studies have reported issues with placement of wrist and ankle devices. Alternative devices may provide a solution for activity monitoring.

Objectives

To evaluate the feasibility of a thigh-worn accelerometer to measure physical activity in patients recovering from critical illness. Activity levels of the sample were also recorded.

Methods

A prospective observational feasibility study was conducted within a 33-bedded critical care unit over 9 weeks. Thigh-worn activPAL™ accelerometers were applied to patients for the duration of their admission and observed activity was recorded.

Results

12 participants were recruited and median (IQR) device wear time was 268.35 (299.15) hours or 99.58% of their critical care admission. A priori feasibility success criteria of three days wear time for more than 10 hours were achieved in every participant. Device removal primarily occurred for recharging. Agreement between device recorded and nurse observed activity was 96.23%. A median (IQR) of 99.82% (0.24%) of participants time was spent lying or sitting.

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Conclusion

The practical application of a thigh-worn accelerometer appeared feasible in this population. There was excellent agreement between device measurements and observed activity levels. As this was a small, single centre study additional research is necessary to further inform the feasibility of this device and investigation of its validity is required.

2nd place

Efficacy of unsupervised exercise in adults with obstructive lung disease: A systematic review and meta-analysis

Kate Parrott[1], Daniel Taylor[2], Alex R. Jenkins[3], Alex Benham[4], Samantha Targett[5] and Arwel W. Jones[6]

Abstract

Introduction

There is a strong evidence base showing the effectiveness of supervised exercise interventions however the benefits of unsupervised exercise programmes (UEP) in obstructive lung disease are unclear. The aim of this systematic review was to synthesise evidence regarding the efficacy of UEP versus non-exercise based usual care in patients with obstructive lung disease.

Methods

Electronic databases (MEDLINE, CINAHL, EMBASE, AMED, Web of Science, Cochrane Central Register of Controlled Trials, PEDro) and trial registers were searched from inception to April 2020 for randomised trials comparing UEP with non-exercise based usual care in adults with COPD, non-cystic fibrosis bronchiectasis or asthma. Primary outcomes were exercise capacity, quality of life, mortality, exacerbations, and respiratory-cause hospitalisations.

Results

16 trials (13 COPD, 2 asthma, 1 chronic bronchitis: 1,184 patients) were included. Only data on COPD was available for meta-analysis. UEPs resulted in a statistically but not clinically significant improvement in 6MWT (n = 5, MD = 22.0 metres, 95% CI 4.4 to 39.6 metres, p = 0.01). UEPs lead to statistically significant and clinically meaningful improvement in SGRQ (n = 4, MD = -11.8 points, 95% CI -21.2 to -2.3 points, p = 0.01) and CRQ domains (Dyspnoea, n = 4, MD = 0.5 points, 95% CI 0.1 to 0.8 points, p <0.01; Fatigue, n = 4, MD = 0.7 points, 95% CI 0.4 to 1.0 points, p <0.01; Emotion,

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n = 4, *MD* = 0.5 points, 95% CI 0.2 to 0.7 points, *p* <0.01) compared to non-exercise based usual care.

Conclusion

This review demonstrates clinical benefits of UEPs on HRQoL in patients with COPD. High-quality randomised trials are needed to examine the effectiveness of prescription methods.

Note

Authors contributed equally and should be considered co-first authors.

3rd place

Paediatric respiratory on-call working post-qualification: reporting the views of final-year physiotherapy students from a focus group and semi-structured interviews

Zoe Bowen[1], Mollie Boyce[2] and Holly Spencer[3]

Abstract

Background

On-call paediatric physiotherapy provides unplanned respiratory assessment and treatment outside normal working hours, for acutely unwell children. Physiotherapists are vital in selecting appropriate and timely treatment to prevent deterioration. On-call services are an area for concern, particularly in new graduates reporting anxiety and lack of preparedness, yet little research focuses specifically on paediatric services.

Aims and objectives

Exploring perceptions of readiness amongst final-year physiotherapy students for emergency paediatric on-call duties, to help identify learning needs and support strategies required to prepare them for employment post-qualification.

Research design

Qualitative methodology utilising semi-structured interviews and a focus group. 10 participants were recruited from one final-year BSc Physiotherapy cohort at Cardiff University (interview $n = 4$, focus group $n = 6$). Participants were required to have done a respiratory and/or paediatric placement. Ethical approval was granted in July 2019 by the Cardiff University School of Healthcare Sciences Ethics Committee. Thematic analysis was utilised to analyse the transcribed data. Initially carried out as separate studies, data was triangulated and analysed together to produce themes for discussion.

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Results

4 themes were identified:

1. Professional identity.
2. Methods of preparation and support.
3. Personal attitudes.
4. Clinical challenges.

Conclusion

Readiness for on-call paediatric working appears to be influenced by undergraduate preparation, with value given to clinical respiratory and paediatric placements, in providing the appropriate skills. Consensus implies that final-year students do not feel prepared for on-call paediatric working. Suggested further preparation included simulation-based training, on-call shadowing opportunities and increased exposure to relevant populations and environments.

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Adapting airway clinics for bronchiectasis patients in response to COVID-19

Ilona Littler[1], Kirsten McDonnell[1], Hattie Wood[1] and Helen Ashcroft-Kelso[1]

Abstract

Introduction

Aintree University Hospital's Airway Clearance Clinic (ACC) predominantly manages patients with a primary diagnosis of Bronchiectasis. Respiratory physiotherapy is recommended by BTS Guideline for Bronchiectasis in Adults (2019) (Hill et al. 2019). Video consultation (VC) was strongly encouraged by the BTS update June (2020) (Connell et al. 2020) for sputum clearance during COVID-19 pandemic. Continuity of ACC was prioritised to prevent patient deterioration and hospital admissions, necessitating the pilot of VC approach.

Aim

Pilot VC to: mitigate risks associated with COVID-19, establish acceptability and patient satisfaction, develop a fit for purpose novel clinic option in anticipation of longer-term access challenges.

Methods

46 referrals were screened to ensure suitability for VC using a screening tool. ACC staff completed VC training. Patient information leaflets were developed and sent to patients. VC appointments were conducted. Physiotherapists reported feasibility and perceived limitations. Qualitative patient feedback was gathered via questionnaire post clinic.

Results

52% of referrals screened were deemed suitable for VC ($n = 24$). 22 patients accepted and attended ($m = 10$, mean age 63.6). 88% reported VC was beneficial. 70% would choose VC in future. 35% had some degree of difficulty accessing VC. 75% were *self-isolating* as *high risk* individuals.

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Conclusion

VC enabled an ACC service to be provided despite the COVID-19 pandemic, allowing vulnerable patients to access essential treatment advice for their chronic respiratory condition, as well as reassurance around COVID-19. This project highlighted a plausible future option for ACC clinic although further developments are required including evaluation of IT literacy in this patient group.

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

Sarah Fitzgerald[1], Charmi Lathia[1] and Paul Wilson[1]

Abstract

Background

The COVID-19 pandemic forced the evolution of face-to-face CF MDT clinics into an entirely remote service. Our virtual clinics included telephone reviews with specialist physiotherapists.

Aims

To understand the experiences of our patients 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.

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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.

Allied Health Professional (AHP) led post COVID-19 model to optimise workforce and identify the health needs of the post-acute COVID-19 population

Sarah Fowler[1], Rebecca Impson[1], Kate Harrall[1], Emma Howlett[1], Alexander Royan[1], Christine Delon[1], Jonathan Douse[1]

Abstract

Introduction

We describe an AHP led, telephone follow-up service for patients admitted with COVID-19. We identify the range and severity of post-acute health needs, and demonstrate how this model can effectively deliver support.

Methods

395 of 504 patients discharged from two district general hospitals were contacted by telephone (78.4%) using a protocol driven questionnaire. 75% of the staff used were shielding. They were of varied seniority (band 4–7) and subspecialty. Patients were given advice, signposted to self-management resources and referred to specialist services.

Results

Mean time to follow-up was 89 days post-discharge. Mean clinical time per patient 56 minutes. Ongoing symptoms included fatigue 42% (31% mild, 57% moderate, 6% severe), cough 35%, breathlessness 29%, cognitive/memory impairment 16%, poor appetite 13% and voice change 6%. Functional impairment measured by Barthel Index was present in 61%. Admission to intensive care was associated with increased fatigue and breathlessness. In 82% of cases patient needs were effectively managed by the call handler. Of onward referrals; 33% for community-based rehabilitation, 14% mental health support, 13% SLT and 11% dietetics.

Conclusions

AHP led telephone follow-up can identify ongoing health needs of patients after COVID-19. At 3 months patients symptoms were consistent with emerging published

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literature (Halpin et al. 2020). This method of service delivery utilised predominantly shielding staff. The protocol driven questionnaire enabled staff from a range of banding and specialisms to be utilised. This model successfully supported patients to self-manage and ensure access to specialist services where appropriate. This model may be an appropriate template for future 'post-COVID syndrome assessment clinics'.

Table 1: Most prevalent symptoms related to severity of disease and sex

		Sex		Ward	
		Female	Male	Critical care admission	General ward only
With fatigue	%	51%	47%	76%	46%
	Risk ratio	1.07	0.93	1.67	0.6
	χ^2	$\chi^2 = 1.45$; p-value = 0.48		$\chi^2 = 11.37$; p-value = <0.001	
With breathing difficulties	%	26%	38%	64%	29%
	Risk ratio	0.68	1.48	2.24	0.45
	χ^2	$\chi^2 = 8.11$; p-value = 0.02		$\chi^2 = 18.32$; p-value = <0.0001	
With cough	%	20%	29%	40%	22%
	Risk ratio	0.67	1.49	1.81	0.55
	χ^2	$\chi^2 = 2.55$; p-value = 0.28		$\chi^2 = 2.82$; p-value = <0.09	

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An evaluation of anxiety levels in adults with cystic fibrosis following a change from clinic spirometry to home spirometry

Beth Budden[1], Jane Metcalfe[1], Kath France[2], Kirsteen Hasney[2], Katy Lee[2], Nicola Robson[2] and Tracey Daniels[1,2]

Abstract

Background

During the COVID-19 pandemic people with Cystic Fibrosis (pwCF) were asked to shield as they were considered to be clinically vulnerable. A NHSE scheme allowed the purchase of home spirometry devices, which enhanced remote patient care.

Objective

During the pandemic, the York Hull Adult CF Service used home spirometry (Nuvoair) to monitor lung function. A service evaluation was carried out to evaluate the change from clinic spirometry to home spirometry. One aim was to establish patients' anxiety levels regarding spirometry following the change.

Method

Online surveys, which aimed to obtain perceptions relating to anxiety, were sent to pwCF and clinicians. 28 out of 70 pwCF and 8 out of 15 clinicians responded.

Results

Most respondents reported never experiencing feelings of anxiety using spirometry (Figure 1). Only 4% of pwCF claimed to feel anxious using spirometry in the clinic. Interestingly, when asked to describe clinic spirometry, words such as *anxious* and *worry* were used frequently by pwCF (Figure 2). Most clinicians believed that pwCF are anxious whilst using spirometry (Figure 3), with 50% linking anxiety to the clinic.

Conclusions

- Adults with CF do not report significantly more anxiety using spirometry in one setting in comparison to the other.

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- Style of questioning affects response from pwCF regarding spirometry anxiety.
- There is disparity between individuals' reported feelings of anxiety and clinicians' perceptions of the anxiety experienced by pwCF around spirometry.

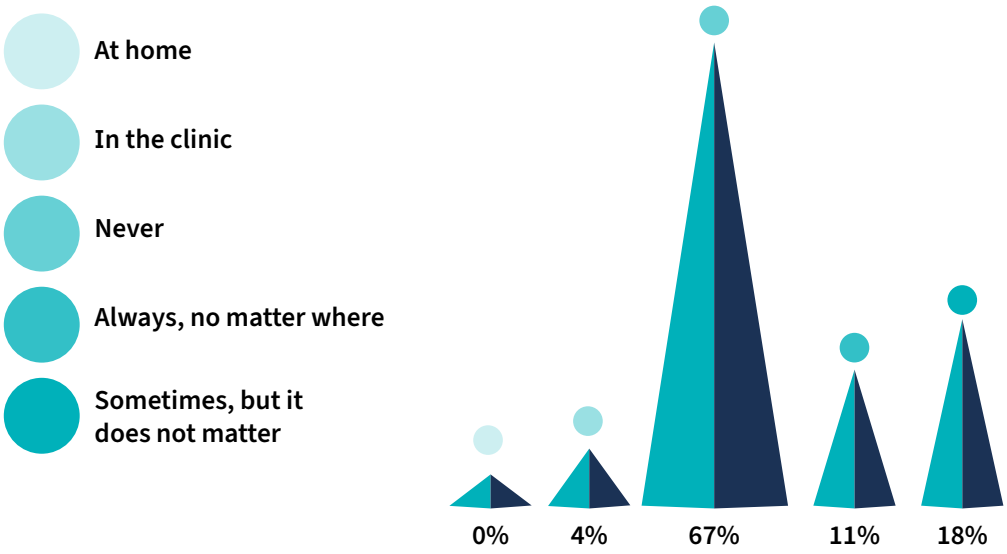

Figure 1: Anxiety: 'I feel nervous, anxious or worried about spirometry'

Figure 2: Word cloud

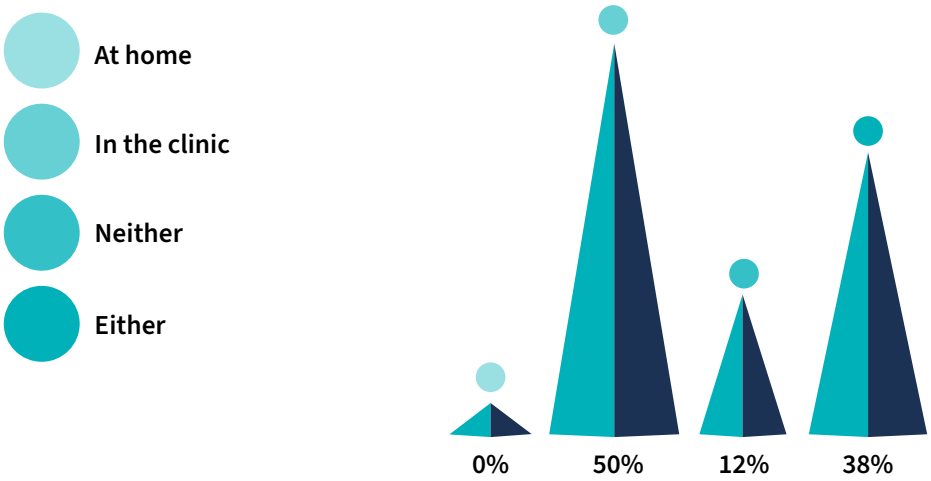

Figure 3: Anxiety: 'Patients seem to be nervous, anxious or worried about spirometry'

An evaluation of a pilot early supported discharge service launched four weeks prior to lockdown due to COVID-19

Rachael Colclough[1], Rebecca Wagstaff[1], George Reese[1], Sharon Rees[1], Kate Breese[1], Geraldine Owen[1], Susan Porter[1], Carron Nicholls[1], Simon Gompertz[1], Thomas Avent[2], Della Thomas[2], Louise Little[2] and Kam Sidhu[2]

Abstract

Background

An early supported discharge (ESD) pilot service for patients admitted with an acute exacerbation of chronic obstructive pulmonary disease (COPD) was launched four weeks prior to UK Lockdown one. This formed part of a wider redesign of local services by the clinical commissioning group (BTS 2019).

Methods

ESD was a joint venture between hospital respiratory specialists (Respiratory Support Team: RST) and an expanded community respiratory team (CRT). The ESD provided a 5-day service from Monday to Friday. Members of the CRT would provide home visits and telephone support to patients discharged home early from the hospital for care until stabilised. A trusted assessor model was used with an alert system and DECAF score to identify appropriate patients for ESD, (Colclough 2014; Steer 2012). Re-admissions to hospital were recorded at 28 days and 90 days.

Results

35 patients were discharged under the ESD. 1 patient was readmitted whilst under ESD due to a non-respiratory event. Re-admission following discharge from ESD at 28 and 90 days were 23% and 46% respectively. Nationally re-admissions at 28 days of 33% show this ESD sub-group to be lower than this (Stone 2012). Of the 8 out of 35 people readmitted at 28 days five had multiple readmissions. At 90 days 16 out of 35 patients were re-admitted.

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Conclusions

ESD is effective according to national re-admission standards using a trusted assessor model to screen into this service. Re-admissions cannot be reduced by ESD alone. An admission avoidance service and community palliative care intervention should be funded.

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An integrated virtual Short Term Oxygen Therapy (STOT) pathway to facilitate and support discharge of patients' recovering with COVID-19 at University Hospital Lewisham is a safe, cost effective and future winter bed pressure solution

Jack Howell[1] and Mark Haigh[1]

Abstract

Introduction

A Short Term Oxygen Therapy (STOT) pathway was introduced to facilitate discharge of medically stable patients with an ongoing supplemental oxygen demand following their admission with COVID. This pathway was developed by the Integrated Respiratory Team consisting of Respiratory Nurses and a Physiotherapist.

Aim

To establish a new pathway for medically stable patients with an ongoing oxygen demand to facilitate early discharge and increase hospital capacity.

Method

A comprehensive referral pathway and virtual ward was created. Patients were assessed on the ward for both static and ambulatory oxygen requirement. Once admitted onto the STOT pathway patients were supported virtually through telephone triage follow up and if necessary seen face to face with supported discharge home visits.

Results

In total, 51 patients were admitted to the pathway between January and March 2021. The implementation of the pathway when the hospital was at full capacity as a result of COVID-19 admissions saved approximately 750 accumulative bed days with an approximate cost saving of at least £300,000. Average length of stay on the virtual ward to wean off of oxygen was 14.7 days per patient.

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Conclusion

In conclusion, this service was created as a pandemic response. The pathway allowed early hospital discharge, created bed flow and provided a cost effective service to potentially impact future practice when hospital bed states are at capacity. The use of a more comprehensive virtual ward system will allow better transition from acute to community follow up whilst also allow screening of these patients to be highlighted more effectively.

A prospective cohort study of consecutive critical care patients with diagnosis of COVID-19 looking at identification of rehabilitation needs once discharged from the acute hospital setting

Sarah Curran[1], Michaela Frankland[1], Hollie Ringrose[1] and Aimee Bayliss[1]

Abstract

Background

The longer term sequelae and rehabilitation needs following infection with COVID-19 are yet undetermined. To gain an understanding of rehabilitation demands.

Aim

To evaluate the post-hospital discharge characteristics and rehabilitation needs of patients admitted to critical care (CC) with COVID-19 infection.

Method

Key characteristics of COVID-19 critical care discharges were collated using an adapted version of the COVID-19 Yorkshire Screening tool. Post-hospital discharge telephone consultation delivered by critical care therapists using screening tool at 4–6 weeks, and plan to screen at 6 and 12 months post-secondary care to ascertain ongoing clinical and rehabilitation needs.

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Results

Breathlessness	53%
Fatigue	67%
Ongoing reported improvements	100%
Mood/Psychological	35%
Speech/swallow	30%
Rehab pathways	
Simple discharge home	Pathway 0 = 50%
Support at home, health and social care	Pathway 1 = 27%
Rehabilitation in bedded setting	Pathway 2 = 23%
Life changing home is not an option	Pathway 3 = 0
Males	41
Females	9
White	33
BAME	17

55 patients were discharged from critical care following COVID-19 over a 6 month period from April 2020–September 2020.

- Average length of stay on critical care for this patient cohort was 15.6 days. 9.5 days in secondary care post discharge from critical care.
- 50 telephone consultations were completed.
- The post-COVID-19 rehab pathways defined by Gregory et al. (2020) where used to assess pathways.

Conclusion

Patients admitted to critical care following COVID-19 have ongoing symptoms and rehabilitation needs in the community that can be captured by early telephone screening. Some of the results are contra to the national prediction.

A retrospective study exploring demographics and physical outcomes in COVID-19 patients during the first wave of the 2020 pandemic on the adult critical care unit (CCU) at University Hospitals of North Midlands NHS Trust (UHNM)

William Leeson[1] and Clare Johnson[1]

Abstract

Rationale

Significant numbers of patients admitted to CCU with COVID-19 had severe disease leading to multi-organ failure requiring prolonged mechanical-ventilation, increased use of neuromuscular-blockades and deconditioning (Cao 2020). This has likely led to increased CCU length of stay (LOS), neuromuscular weakness and loss of function. Chelsea Physical Assessment Tool (CPAx) (Corner et al. 2014) is a validated measure of physical morbidity in a CCU population, however there is limited data currently exploring physical outcomes of COVID-19 patients.

Objectives

To describe demographics, LOS and CPAx scores of COVID-19 patients admitted to UHNM's CCU.

Methods

Adults with a diagnosis of COVID-19 admitted to the CCU from March 2020–June 2020 were included. Demographics, co-morbidities, days ventilated and CPAx score were recorded. LOS was also recorded and compared against CPAx scores.

Results

n = 80 patients were identified. Demographics are presented in Table 1.CPAx scores were collected on CCU discharge if on CCU >48hours. These are categorised and compared to LOS (Figure 1).

Average number of days ventilated for those who survived was 13.1 days. Days ventilated are compared to CPAX and LOS (Figure 2).

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Table 1: Demographics

	Died in ICU	
	No	Yes
	n = 55	*n* = 25
Demographics		
Age (average years)	55.7	64.9
Gender (% male)	74.5% (41)	64% (16)
Gender (% female)	25.5% (14)	36% (9)
Ethnicity		
White	83.6% (46)	96% (24)
BAME	9.1% (5)	4% (1)
Not stated	7.3% (4)	0% (0)
Co-morbidities		
Hypertension	43.6% (24)	60% (15)
Diabetes mellitus	25.5% (14)	20% (5)
High BMI	27.3% (15)	12% (3)
Obstructive sleep apneoa	12.7% (7)	4% (1)
Cardiovascular disease	10.9% (6)	24% (6)
Cerebrovascular disease	5.5% (3)	4% (1)
COPD/bronchietasis	5.5% (3)	16% (4)
Asthma	16.4% (9)	16% (4)
Chronic kidney disease	7.3% (4)	0% (0)
Malignancy	14.5% (8)	8% (2)
Other (none of above)	27.3% (15)	32% (8)
≥3 co-morbidities	56.4% (31)	52% (13)
None known	5.5% (3)	8% (2)

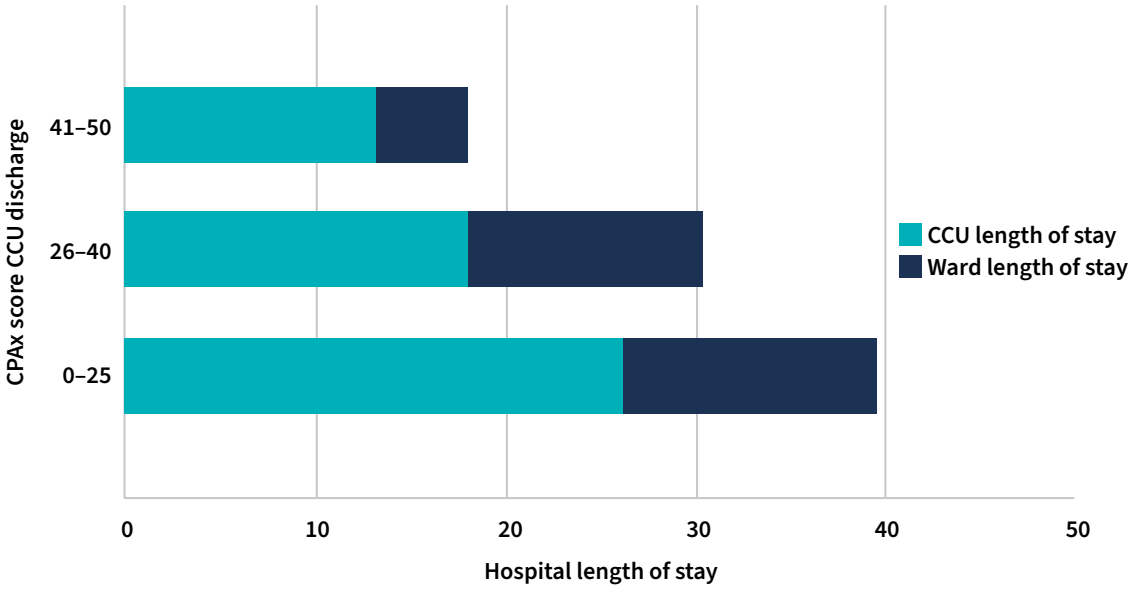

Figure 1: CPAx scores on CCU discharge compared with LOS

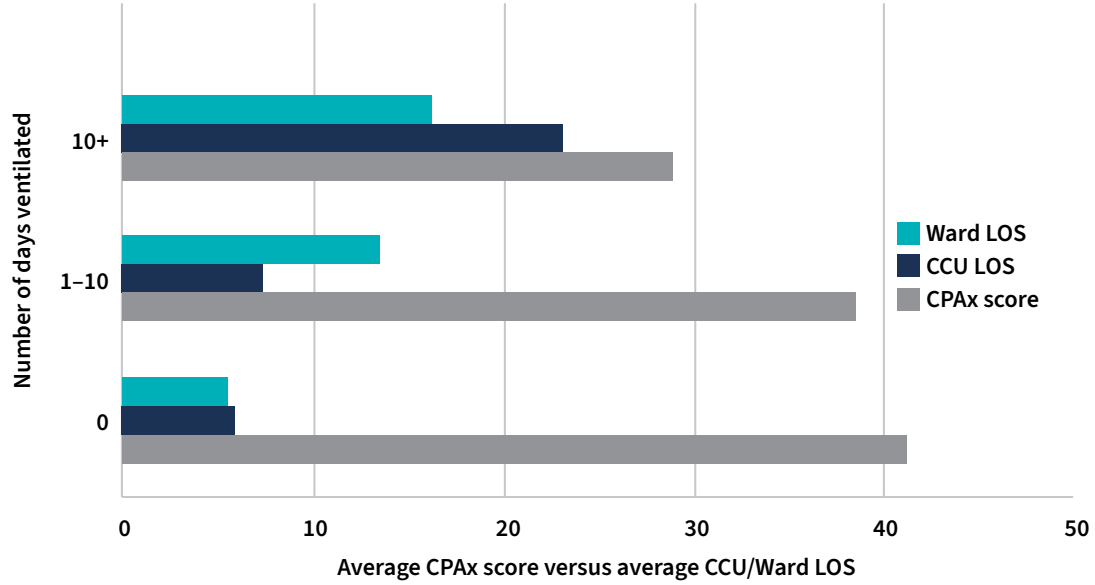

Figure 2: Days ventilated compared with LOS and CPAX scores

Conclusion

There is limited data exploring physical outcomes in COVID-19 patients. It is likely that those with more severe COVID-19 disease admitted to CCU and ventilated for an increased time will have a lower CPAx score. This means an increased hospital length of stay and an increased necessity for rehab. This puts therapists in a crucial position to ensure adequate early rehab of this patient group, following through to their discharge from hospital to reduce their hospital length of stay and burden on the NHS.

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Assessment of the safety and feasibility of a virtual rehabilitation programme after lung transplantation: A pilot study

Nicole Petch[1], Zoe Paterson[1], Ruth Bradley[1], Sarah Hunt[1] and Laura McGarrigle[1]

Abstract

Introduction

Exercise is an evidence-based intervention for improvement of exercise capacity, muscle strength, bone mineral density alongside QOL after lung transplantation (LT). LT recipients can experience severe deconditioning after chronic respiratory failure and a postoperative ICU admission.

The COVID-19 pandemic initially resulted in the suspension of face-to-face outpatient rehabilitation and alongside the direction for LT recipients to shield, left a shortfall in accessible rehabilitation. We developed a **V**Irtual **T**ransplant **R**ehabilitation (VIcToRy!) programme and performed a pilot study with two recent LT recipients.

Aims

To assess the feasibility, safety, efficacy, and acceptability to LT recipients of a course of virtual rehabilitation.

Method

2 bilateral-sequential LT recipients were enrolled. Participants were emailed an information pack which included a guide to the virtual platform (Zoom), a safe environment checklist, modified BORG scale, explanation of outcome measures and an exercise diary.

At each session a safety checklist was completed including a COVID symptom screen and the most recent routine post-transplant monitoring data was collected from the patient (HR, BP, $Sp0_2$, FEV_1, FVC, weight, temperature).

Initial assessment included the 5STS and the 1MSTS, the HADs and ABC. SMART goals were set. A weekly 1:1, 45-minute exercise session including aerobic and resistance training was completed.

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Results

1 exercise session was omitted due to hypoglycaemia. We observed good engagement, no adverse events, and improvements in most outcome measures (Table 1).

Table 1: Results of outcome measures performed before and after course of virtual rehabilitation

Patient	Sessions completed	Time point	5 times sit to stand -5STS (secs) [MCID 1.3 secs]	1 minute sit to stand- 1MSTS (reps) [MCID 3 reps]	Activities-specific balance confidence scale – ABC (%) [MCID 19%]	HADS [MCID 1.5]
A	7	Pre-rehab	11.93	23	62.5	A 3, D 0
		Post rehab	8.53	22	69.3%	A 5, D 0
B	8	Pre-rehab	8.06	20	97.5%	A 2, D 0
		Post rehab	7.09	32	99.375 %	A 1, D 0

Conclusion

1:1 virtual exercise after LT is feasible, safe and acceptable to patients. More data is needed to assess efficacy and the feasibility of a group programme.

Creating a COVID-19 rehabilitation follow up pathway and outcomes of the pathway during the first COVID-19 wave at Royal Bournemouth Hospital

Katrina White[1] Jenny Rains[1] and Shannon Saunders[1]

Abstract

Introduction

In the first wave of the COVID-19 pandemic, patients were developing long term needs with breathlessness, fatigue, mobility, return to work and mental wellbeing; we felt a duty of care to provide post discharge support to aid their recovery.

Aims and objectives

A collaborative pan-Dorset, pan-speciality pathway was implemented with the aim to provide follow up for all COVID-19 patients admitted to Royal Bournemouth Hospital who met a peer reviewed criteria. A retrospective review of the themes, long term symptoms and patient demographics were generated after the first wave.

Methods

All COVID-19 inpatients were identified by hospital informatics between 24th February and 23rd June 2020, alongside a referral process to identify those suitable for inclusion. The intervention was a screening phone call at 1 week post discharge, a second phone call at 6 weeks and physical follow-up at 12 weeks if required.

Results

102 out of 185 patients screened met the inclusion criteria for a follow up phone call, 38 required second phone calls, 11 required physical assessment. 11% of patients phoned required further referrals to community services. Common themes at 6 weeks were fatigue management, return to work, and return to exercise. Patients who were admitted to ICU all required further follow up.

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Conclusions

A follow up rehabilitation pathway was created and implemented successfully for all patients admitted to Royal Bournemouth Hospital during the first COVID-19 wave which can be adapted for the future. The feasibility of this is dependent on the volume of patients and investment in services.

Critical care rehabilitation outcomes in COVID-19 compared to other respiratory viruses- an observational evaluation

Stefania Spiliopoulou[1]

Abstract

Introduction

Estimating the rehabilitation trajectory of SARS-CoV-2 patients and other respiratory viruses such as influenza is essential for seasonal planning of intensive care (ICU) rehabilitation services in a post COVID-19 world. This service evaluation compared the differences in disease severity and time taken to achieve rehabilitation milestones in ICU between these two groups of viruses.

Methods

Adults admitted to ICU with a diagnosis of SARS-CoV-2, influenza, H1N1, coronavirus, metapneumovirus and RSV were included in this retrospective evaluation. Rehabilitation milestones were measured in days taken to sit out of bed (SOOB), sit on the edge of the bed (SOEOB) and stand, as well as ICU mobility scores on discharge.

Results

109 COVID-19 and 59 non COVID-19 patients admitted to ICU were included. In comparison to other respiratory viruses, patients with COVID-19 took an additional 6 and 2 days to SOOB ($p = 0.002$) and stand ($p = 0.046$), respectively. IMS scores of 5 for COVID-19 patients and 4 for other viruses were noted ($p = 0.0015$). COVID-19 patients were mechanically ventilated for an additional 3 days ($p = 0.018$), had 17% more neuromuscular blockade usage ($p = 0.034$), 24% more proning needs ($p < 0.001$) and 31% more pre-oxygenation needs during rehabilitation ($p < 0.001$).

Conclusions

The severity of the COVID-19 illness results in patients requiring longer timeframes to achieve basic rehabilitation milestones when compared to other respiratory viruses. ICU physiotherapy services require advanced planning

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of resources and staffing during seasonal periods to account for the added pressure of COVID-19, which is expected to continue occupying ICU bedspaces despite the development of a vaccine.

Home monitoring of adult patients with cystic fibrosis during the novel coronavirus pandemic

Ann Banks[1], Joanna Saunders[1], Lisa Johnson[1], Josie Cunningham[1], Alexandra Higton[1] and Christopher Orchard[1]

Abstract

Introduction

During the COVID-19 pandemic patients with Cystic Fibrosis (CF) were advised to 'shield'. Telephone clinics replaced face-to-face appointments and lung function and weight were not monitored. Previous research has shown that home monitoring can reduce the need for intravenous antibiotics.[1] Therefore, we introduced weighing scales, portable spirometers and 'traffic light systems' (TLS) to monitor the health of our patients.

Objectives

1 To determine adherence to and usefulness of home monitoring and TLS.
2 To explore the effect on lung function and healthcare utilisation over 8 months.

Methods

16 adults with CF who had >28 days of intravenous (IV) antibiotics in the preceding 12-months were evaluated. Patients completed weekly readings at home of weight and spirometry on a NuvoAir spirometer. They received a TLS giving individualised advice on how to manage deterioration in their weight or lung function. A survey was emailed to ascertain views on home monitoring and the TLS.

Results

Although completed regularly, adherence to weekly spirometry was only 38%. After introducing home monitoring, antibiotic usage reduced for both IV and oral (10 versus 8 and 16 versus 10 patients respectively.

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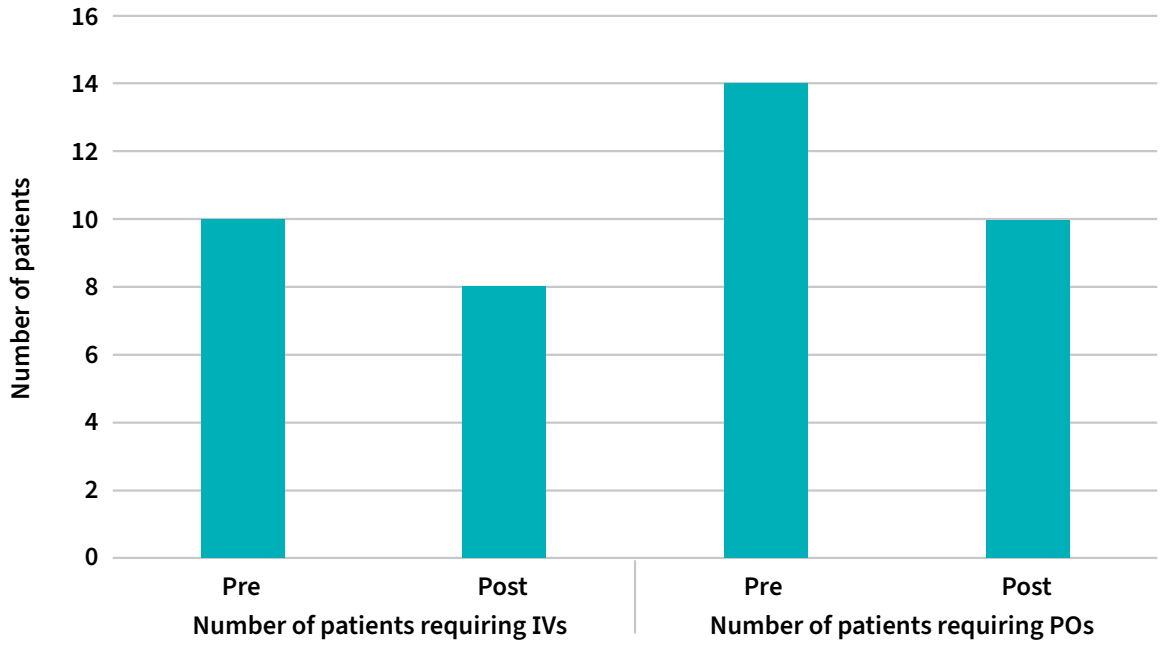

Figure 1: Number of patients requiring IV and oral antibiotics before and after home monitoring was introduced

Three-quarters (75%) found their TLS useful and for 50% it prompted a change in treatment. Lung function remained stable between January and June 2020.

Conclusions

Home monitoring and self-management was well received. Healthcare utilisation reduced without a detrimental effect on lung function. This may indicate that home monitoring helped counteract the detrimental effects of reducing face-to-face appointments but may also be, in part, due to shielding.

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Is pulmonary rehabilitation (PR) effective in patients recovering from severe COVID-19 pneumonia?

Frankie Knight[1], Laura Cornish[1], Xu Shen[1] and Catherine Thomas[1]

Abstract

Introduction

There is an abundance of evidence to support Pulmonary Rehabilitation (PR) in people with chronic lung conditions. The most effective rehabilitation for COVID-19 survivors remains unknown with no evidence PR is beneficial. SARS/MERS data shows some evidence that PR-based programmes might be valuable. Likewise, similarities between chronic respiratory conditions and COVID-19, suggest some clinical justification to support adapting existing PR programmes for survivors (British Thoracic Society 2020). Approximately 30% of our patients reviewed at 12 weeks were referred to PR services.

Aim

To establish effectiveness of PR in survivors of COVID-19.

Method

Patients admitted with severe COVID-19 pneumonia were followed-up 12 weeks post-discharge as per BTS guidelines. Severe COVID-19 pneumonia includes those requiring mechanical ventilation, CPAP, NIV, NHFO or FiO_2 >40%. At 12 weeks, appropriate patients were offered a 6-week PR course that mirrored the programme offered to our usual cohort. Adaptations to exercise and education provided were from emerging guidance.

Results

Complete data was available for *n* = 15 (9 males, mean age 61 years).

MRC, PCFS, CRQ, mood questionnaires and 6MWT were recorded.

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Table 1: demonstrates mean scores before and after PR. Wilcoxon and paired *t*-test were used with the significance value $p = 0.05$

		Pre-PR	Post-PR	Mean difference (*p* value)
MRC		2.87	2.27	-0.60** (0.025)
Post **C**OVID **F**unctional Status (PCFS)		1.93	1.40	-0.53 (0.4)
Chronic **R**espiratory **Q**uestionnaire (CRQ)	Dyspnoea	2.87	4.01	1.14* (0.02)
	Fatigue	3.21	4.07	0.86* (0.01)
	Emotion	3.67	4.58	0.91* (0.009)
	Mastery	4.02	4.93	0.91* (0.02)
PHQ-9		12.93	9.67	-3.26* (0.01)
GAD-7		10.13	9.07	-1.06 (0.1)
6Minute **W**alk **T**est(m) (6MWT)		340.93	398.87	57.94* (0.008)

*Paired *t*-test ($p < 0.05$). **Wilcoxon ($p < 0.05$)

Conclusion

Initial findings in a small sample are positive for PR assisting recovery for COVID-19 survivors. With statistically significant differences in all bar two outcome measures. We hope to continue to offer PR post severe COVID-19 pneumonia as cases increase as initial analysis has shown very good effectiveness without adverse effect.

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Manchester mobility score (MMS) as an outcome measure of progression in COVID-19 patients following admission to intensive care: A retrospective study

Rachel Curran[1], Danielle Browne[1], Emily Toal[1], Ross Edgar[1] and Rachael Colclough[1]

Abstract

Introduction

Patients with severe COVID-19 requiring intensive care have been observed to acquire significant neuromuscular weakness and loss of function. Their rehabilitation burden is high throughout their management pathway with paucity of evidence to describe this need and a lack of objective measures. Validated for use in an ICU setting, Manchester Mobility Score (MMS) (McWilliams et al. 2015) may be a useful objective measure of mobility progression and be predictive of individuals' ongoing rehabilitation needs.

Objectives

We aimed to describe the progression of mobility in patients admitted to ICU with COVID-19 through their rehabilitation journey to hospital discharge.

Method

Data was retrospectively collected from an electronic patient record system on 50 sequential patients discharged from an ICU to respiratory wards with confirmed COVID-19 over a one month period.

Results

	N/median	%/IQR
Male:Female	36:14	72%:28%
Age at admission	52	45–60
Days on ICU	20	16–26
Tracheostomy	39	78%
Days in acute hospital	31	23–42
MMS at ICU DC	4	2–5
MMS at Acute Hospital DC	6	6–7

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Change in MMS from ICU DC to leaving hospital was 2 (IQR 2–4) demonstrating improvements in mobility. Only 37% of patients had no acute rehabilitation needs delaying DC, yet they had shorter ICU LOS 15 days (IQR 11–21), hospital stay 24 days (16–32) and 53% requiring tracheostomy. Median MMS on DC from ICU was 4 in those requiring ongoing rehabilitation and those not.

Conclusion

MMS provided a useful objective marker in tracking improvements in functional mobility following DC from the ICU in this cohort. This demonstrates its potential for use outside of its initial validated scope. The use of the MMS on DC from ICU did not predict those patients with further ongoing rehabilitation needs. This may be due to a ceiling effect as a maximum score only represents a 30m distance.

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MDT critical care follow up clinic for COVID-19 survivors: A 5-week pilot evaluation

Siobhan Wilde[1], Rima FitzGerald[1], Merryn Turner[1], Rachel Lawton[1] and Anita Humbir[1]

Abstract

Introduction

The range and extent of the medium/long-term problems experienced by survivors of COVID-19 following hospital discharge is poorly understood. To better understand this a service initiative was set up to trial a bespoke COVID-19 critical care MDT follow up clinic.

During a 5 week pilot of the clinic, 24 critical care survivors were assessed virtually via tele-clinic utilising the COVID-19 Yorkshire Rehabilitation Screening (COVID-19 YRS) tool prior to being invited into an outpatient clinic for MDT assessment (consisting of a critical care consultant, follow up nurse, physiotherapist, occupational therapist, speech and language therapist and dietician).

22 patients required Level 3 care, and two patients Level 2 care. New illness-related fatigue was the most common symptom (83% of patients), followed by difficulty performing usual activities (70%) and mobility issues (57%). >70% of patients reported difficulty in 5+ domains. Onward referrals were offered to all patients following MDT assessment with 59% of patients having successful referrals made.

The clinic was successfully set up and a model created for future clinics to be replicated with appropriate funding. The virtual screening highlighted short and medium-term symptoms and could assist triage patients for MDT review. The MDT clinic allowed clinicians to provide patient reassurance, further signposting and onward referrals to support patient's rehabilitation journey. Longer term-follow up review is warranted to monitor patients' ongoing needs and support them return to their previous level of function and quality of life.

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Physical and psychological outcomes at hospital discharge from a post-ICU COVID-19 rehabilitation ward: An observational study

Francine Sehmbi[1], Rhona Conn[1], Emily Dent[1], Sarine Baz[1] and Fiona Howroyd[1]

Abstract

Introduction

The physical and psychological impacts of critical illness are well documented (Inoue et al. 2019). The COVID-19 pandemic led to a surge in intensive care unit (ICU) admissions, yet the impact of the virus on physical and psychological morbidity is currently unknown.

Aims

To describe patient physical and psychological outcomes at the point of hospital discharge, following an ICU admission with COVID-19.

Methods

Patients admitted to a post-ICU COVID-19 rehabilitation ward were included. Therapy provision included individual and group interventions across seven days. Outcomes completed at hospital discharge included: One Minute Sit to Stand Test (1MSTS), Manchester Mobility Score (MMS), Hospital Anxiety and Depression Scale (HADS) and the Intensive Care Psychological Assessment Tool (IPAT).

Results

23 patients were included in the analysis (Table 1). 82% of patients were male (n = 19), with a median age of 57 years and pre-admission clinical frailty score of 2 (managing well). Patients required a median of 31 days ventilated on the ICU and had a median hospital length of stay of 58 days. Physical and psychological outcomes are recorded in Table 2.

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Table 1: Patient demographic and admission details

Patient Data ($n = 23$)	Age [years]	Gender [n] Male/ female	Clinical Frailty Scale (CFS)	ICU length of stay (LOS) [days]	Hospital LOS [days]	Ventilated days
Average (median)	57	19/4	2	32	58	31

Table 2: Patient physical and psychological outcomes at the point of hospital discharge

Outcomes	MMS ($n = 23$)	1MSTS ($n = 23$)	HADS ($n = 20$)	IPAT ($n = 20$)
Average (median)	7	Number: 12 BORG: 3	Anxiety = 6 Depression = 3.5	6

Conclusions

Despite requiring approximately one month mechanically ventilated on the ICU, patients were discharged mobile and with low levels of psychological symptoms following admission with COVID-19. However, although the group were previously deemed 'well' and of working-age, patients had poor levels of lower limb strength and exercise endurance (Strassmann et al. 2013).

The results suggest that the post-ICU COVID-19 rehabilitation ward service was effective. However, further research is required to explore the long-term impacts of COVID-19.

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Prone position and peripheral nerve injury; outcome data for a cohort of patients with COVID-19

Matthew Fergusson[1], Chloe Apps[1,2,3], Kelly Morris[1] and Rachel Farley[1]

Abstract

Introduction

The COVID-19 pandemic has led to an increased number of patients requiring mechanical ventilation in prone position. Early case reports suggested an increased prevalence of peripheral nerve injuries (PNIs) in this cohort.

Aims and objectives

This study aimed to establish the prevalence of suspected PNI in the adult critical care COVID-19 population. A secondary aim was to identify potential risk factors for PNI.

Methods

A retrospective data collection was completed to identify patients ventilated in prone position between March and May 2020. Screening of physiotherapy notes was undertaken to identify individuals with suspected PNIs. In the absence of clinical testing; range of motion (ROM), power, sensation, function and pain were used as surrogate markers. Baseline demographic information was collected to highlight potential risk factors for PNI.

Results

95 patients were included. Average age was 55.32, with 71% male and the average BMI 29.29. 12 suspected PNIs were identified, 8 in the upper limb and 4 in the lower limb, with a prevalence rate of 13%. Reduced power and sensation were the most commonly used assessment findings to highlight a suspected PNI. EMG/NCS testing was only obtained once. Patients identified as having a suspected PNI underwent more episodes of proning (6.3 versus 3.4; $p < 0.05$.) Otherwise there were no demographic differences between the two groups.

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Conclusions

Patients undergoing more episodes of proning appear to have an increased risk of developing a suspected PNI however there was a lack of EMG/NCS testing to confirm clinical suspicion. Further research into the reasons behind this is required.

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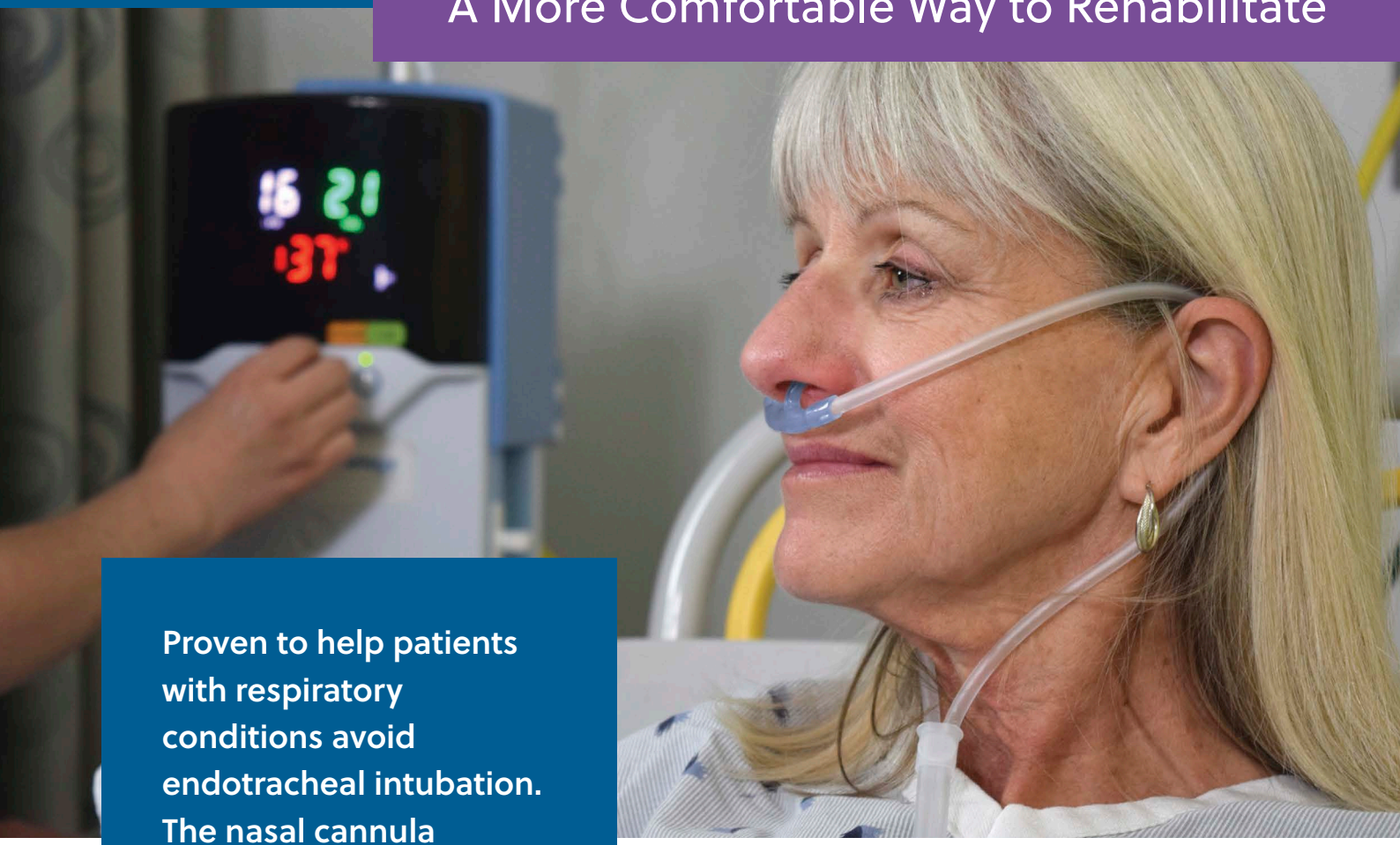

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Rehabilitation after critical illness: A survey of current UK post-ICU follow-up services amid the COVID-19 pandemic

Adam Harriman[1] and Fiona Howroyd[1]

Abstract

Introduction

National guidance for recovery after critical illness advocates multidisciplinary follow-up and rehabilitation (Connolly et al. 2014). The COVID-19 pandemic led to an overwhelming surge in ICU admissions and subsequently resulted in the largest and fastest repurposing of the NHS in history.

Objective

We aimed to identify current prevalence and format of post-ICU follow-up services in the UK, during the COVID-19 pandemic.

Method

A short online questionnaire was designed and sent via an NHS respiratory physiotherapist email list.

Results

29 out of approximately 100 surveys were returned, representing 29 UK Trusts. 27 trusts reported provision of post-ICU follow-up. In 19 of these trusts (70%), follow-up services had moved to telephone or virtual formats during the pandemic. The majority of services included nurses, doctors and physiotherapy, while 50% included psychology. Less than half had access to physical rehabilitation, which was conducted in a variety of formats including group classes, individual review and exercise advice.

Conclusion

The survey demonstrates that despite a recent surge in ICU admissions during the COVID-19 pandemic, there is limited provision of post-ICU follow-up across the UK. However, amongst those providing follow-up, there has been a shift from outpatient clinics to telehealth in order to maintain current services. Rehabilitation within post-ICU follow-up

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is varied yet limited. Further work is urgently required to enhance post-ICU recovery and meet the need of the COVID-19 pandemic.

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Rehabilitation post critical illness due to COVID-19: Early findings of an observation study on recovery and rehabilitation

Amelia Palmer[1], Kayleigh Cooper[1], Gemma Stoner[1], Mary-Kate Standing[1], Ana-Carolina Gonçalves[1], Alexander Hunter[1], Todd Leckie[1], Daniel FitzPatrick[1], Benjamin Hardy[1], A Richardson[1], Christina Koulouglioti[1] and Luke Hodgson[1]

Abstract

Background

The COVID-19 pandemic led to an increase in the number of critical care survivors. Data on the physical and mental health needs of the survivors of this novel disease are still scarce. Effective ways to deliver rehabilitation in a COVID-19 environment are urgently needed.

Methods

In a multi-centre feasibility study, smartwatches were provided to survivors of COVID-19, who required critical care, to monitor their physical recovery and promote physical activity in the context of social distancing. This is being supported by regular remote multidisciplinary support to the survivors and face-to-face follow-ups at 3 months post discharge. The incremental shuttle walk test, 1 minute sit-to-stand, Patient Health Questionnaire (to assess depression) and the Generalised Anxiety Disorder-7 were completed on discharge and follow-up.

Results

To date, 62 survivors have been followed-up (58 ± 11 years old; hospital length of stay of 36 ± 23 days). On hospital discharge, participants had an average incremental shuttle test of 85 ± 65m, increasing to 291 ± 180m at 3 months. The number of sit-to-stands was 15 ± 10, increasing by 8 ± 6 on follow-up. Half of the cohort scored high or very high on depression and anxiety on discharge, whereas 25% did so on follow-up. A total of 23 survivors are wearing and interacting with the smartwatch on a daily basis and the data from the watches is currently being analysed.

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Conclusion

Deconditioning and mental health symptoms after a critical care admission showed improvements 3 months post discharge, with a technology supported rehabilitation programme. Smartwatches are well tolerated by survivors and a useful tool to tailor rehabilitation by clinicians.

Virtual groups as an alternative to face to face pulmonary rehabilitation during the COVID-19 pandemic

Chris Swindale[1], Julie Whiting[1], Catherine Clayton[1], Emily Besley[1], Rebecca Prower[1], Letishia Tirda[1], Suzanne Hambidge[1], and Emma Tucker[1]

Abstract

Introduction

Pulmonary rehabilitation (PR) is a key part of the management for COPD. SARS-CoV-2 caused the suspension of face-to-face PR services in March 2020. Online options are already available in parts of the country, whilst the use of virtual groups has been suggested as a possible alternative, though little research into their efficacy.

Aims and objectives

Virtual pulmonary rehabilitation (vPR) groups were organised and their efficacy assessed compared to previous face-to-face groups (fPR).

Methods

Individuals referred to the service with internet access and appropriate technology were invited to join a virtual group twice a week for 6 weeks. Exercise tolerance was measured using the 1-minute sit-to-stand test for vPR, whilst fPR used the incremental shuttle walk test, 6-minute walk test or 4 metre gait speed. CAT, PHQ9 and GAD7 were completed during the assessment prior to starting, and in the week following the course for both.

Results

63 individuals were assessed for vPR. 58 started and 41 (68%) completed. In comparison, 498 individuals were assessed for fPR, 468 started and 314 (67.1%) completing. 74% vPR completers improved their exercise tolerance significantly compared to 57.2% in fPR. 59% vPR and 56.9% fPR completers improved their CAT score by 2 points or more.

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Conclusions

The percentage of participants who completed vPR, and improved in the outcome measures is comparable to previous data from the service when face-to-face PR was running, showing that vPR is an effective and safe alternative to face-to-face PR. Further research is needed to determine what a virtual course should include.

Virtual post-intensive-care rehabilitation for survivors of COVID-19: A feasibility study

Fiona Howroyd[1], Natacha Earle[1] and Jonathan Weblin[1]

Abstract

Introduction

A virtual post-intensive-care rehabilitation service has been developed for survivors of COVID-19, however its feasibility and impact has not yet been evaluated.

Aims

The aims of this study are:

1 To assess the feasibility (recruitment and retention) of virtual rehabilitation.
2 To assess the impact of virtual rehabilitation on physical and non-physical outcomes.

Methods

A non-randomised, feasibility study was performed. Adults admitted to a large UK intensive care unit with a diagnosis of COVID-19 and surviving to hospital discharge were invited to participate in a virtual rehabilitation programme; consisting of a weekly exercise class and support group.

Primary outcomes were recruitment and retention. Secondary outcomes included physical and non-physical outcomes. Physical outcomes included the One-Minute-Sit-To-Stand Test (1MSTS) as a measure of exercise capacity, Medical Research Council Dyspnoea Scale (MRC) and Quick Dash shoulder disability questionnaire (QD). Non-physical outcomes included the Hospital Anxiety and Depression Scale (HADS), Intensive Care Psychological Assessment Tool (IPAT) and perceived health ratings using the EQ-5D questionnaire.

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Results

38 of 76 eligible patients (50%) agreed to participate in virtual rehabilitation, of which 28 (74%) completed the 8-week programme. There was a statistically significant improvement in all physical and non-physical outcome measures (Table 1). However, it is acknowledged that levels of anxiety, depression and psychological distress were normal prior to commencing rehabilitation.

Table 1: Results of physical and non-physical outcomes pre and post virtual rehabilitation (*n* = 28)

Outcomes	Pre-rehabilitation (median)	Post-rehabilitation (median)	*p*
1MSTS	20 stands (IQR 15–27)	25 stands (IQR 19–31)	<0.001
QD	43.18 (IQR 7.86–53.95)	19.31 (IQR 6.80–37.49)	0.001
MRC	3 (2–3)	2 (1–2)	<0.001
HADS – A	4 (IQR 2–8)	3 (IQR 1–6.75)	0.021
HADS – D	4 (IQR 2–7)	2.5 (IQR 1–5.5)	0.010
IPAT	3 (IQR 1.25–6.75)	2 (IQR 1–4)	0.002
EQ5D	60 (IQR 50–80)	76 (IQR 65–90)	0.001

Conclusions

It is feasible to recruit and retain COVID-19 survivors to virtual post-intensive-care rehabilitation. Those that attended showed improvements in all physical and non-physical outcomes.

Use of CoughAssist E70 DirectView software to improve peak cough flow in a patient with C5 spinal cord injury

Rebecca Davies[1], Daniel Wheeler[1] and Kirsty Jerrard[2]

Abstract

Introduction

Spinal Cord Injury (SCI) is characterised by neuromuscular compromise, often causing impaired cough and retained secretions. Mechanical insufflation-exsufflation (MI:E) is an effective intervention for managing this. The CoughAssist E70 device provides real-time peak cough flow (PCF) and the associated DirectView software (Philips Respironics, Murraysville, USA) allows for analysis of pressure and flow waveforms.

Aim

To ascertain whether use of DirectView software in a tracheostomised 20 year old patient with a C5 SCI can increase PCF and improve secretion clearance.

Method

MI:E was delivered via a facemask, the patient's tracheostomy cuff was deflated and capped off. PCF was measured using the CoughAssist E70. Waveform data from the treatment was interpreted using DirectView. Following analysis, pressures were balanced, inspiratory time increased and inhale flow reduced (Table 1). The patient was re-treated and PCF re-measured.

Results

Oral secretions were not expectorated prior to using DirectView. Manipulation of the CoughAssist E70 settings led to improved PCF (Table 1) and expectoration of secretions.

Conclusion

Using DirectView to inform the CoughAssist E70 settings improved PCF and secretion clearance in a patient with SCI. DirectView software can assist Physiotherapists in clinical decision making regarding MI:E settings to optimise secretion clearance. However, it is important to recognise that additional adjuncts such as use of manual

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assisted cough, pharmacological agents and artificial airways may also significantly impact PCF. Further studies exploring the use of DirectView and the impact of these adjuncts are warranted.

Table 1: CoughAssist E70 settings and PCF results pre and post DirectView analysis

	Mode	Cough-trak	Inhale pressure (cmH_2O)	Exhale pressure (cmH_2O)	Inspiratory time (seconds)	Expiratory time (seconds)	Inhale flow setting	PCF achieved (ℓ/min)
Pre-direct view	Advanced-auto	On	+35	-45	2.0	2.5	Medium	120
Post-direct view	Advanced-auto	On	+35	-35	2.5	2.0	Low	175

Use of lung ultrasound by a physiotherapist to radically alter management of aspiration pneumonia in a patient with neuromuscular disease: A case study

Hattie Jones[1], Joseph Nunan[2], Simon Hayward[3] and Andrew Walden[2]

Abstract

Introduction

Much work has been undertaken to integrate Point of Care Ultrasound (POCUS) into Acute Medicine. This case report demonstrates how lung ultrasound (LUS) altered the management of a patient with type I respiratory failure and highlights the value of physiotherapists training in LUS.

Case presentation

A 64 year old patient with a prior diagnosis of aspiration pneumonia on a background of muscular dystrophy was admitted to the Acute Medical Unit. The patient experienced an acute onset of shortness of breath and was escalated from room air to 15 litres oxygen via a non-rebreather mask, on which the patient's oxygen saturations were 77%. The nursing staff asked for immediate assistance and the Acute Medicine physiotherapist and Acute Medicine middle grade doctor attended to the patient.

On auscultation there were entirely absent breath sounds on the right side anteriorly and posteriorly. A rapidly performed LUS showed consolidation with shred sign at the left base, and right sided absent lung sliding but lung pulse throughout. Thus pneumothorax was excluded and the diagnosis of predominantly right sided mucus plugging was able to be made.

Physiotherapy treatment was initiated using the Cough Assist device followed by oral Yankeur suction. A large volume of thick yellow secretions was cleared, and oxygen saturations rapidly increased to 97%, after which oxygen requirement was weaned to FiO_2 0.40 via Venturi face mask.

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Conclusion

Lung ultrasound is a valuable skill for acute medicine physiotherapists to learn in order to help guide the optimal management of patients with acute respiratory deterioration.

Early mobilisation of the mechanically-ventilated bariatric patient in the ICU: A patient case study

Michael Burton[1] and Fiona Howroyd[1]

Abstract

Introduction and background

Obesity in critical illness is associated with increased risk of prolonged ventilation, poor physical functional and increased ICU length of stay (Jamadarkhana et al. 2013; Bajwa et al. 2012). Bed rest and immobilisation may further contribute to these complications (Rothen at al. 2007). The safety and therapeutic benefits of early mobilisation in the Intensive Care Unit (ICU) are well documented and advocated in national guidelines (National Institute for Health and Clinical Excellence 2009). However, mobilisation of the obese ICU patient presents challenges for healthcare professionals.

Aims and objectives

To document practical solutions to identified barriers when mobilising a bariatric ICU patient.

Methods

We present a qualitative case report of a 237kg patient who was admitted to ICU due to type two respiratory failure associated with pulmonary oedema. Thematic analysis of a multidisciplinary focus-group was completed upon ICU discharge. The key learning points have been categorised into themes following MDT discussion and reflection.

Results

The patient commenced active rehabilitation at day 8 whilst still mechanically ventilated. Following a 31-day ICU stay, the patient was able to mobilise with a frame and supervision for 60 metres at the point of ICU discharge. Thematic analysis identified barriers to rehabilitation with practical solutions (Table 1).

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Table 1: Barriers and practical considerations of early rehabilitation of the bariatric ICU patient

Barriers	Practical considerations
Staffing	• Large resource required. • Designated physio team and key worker. • 10 members of staff required for first edge sit. • Step down approach of staffing numbers for rehabilitation once safety established.
Specialist equipment	• Sourced from external supplier on loan including hoist, bed, mattress, over-head bed rail, standing aid, commode, chair with pressure relieving cushion. • Appropriate space is required for equipment storage.
MDT working	• Early referral to Manual Handling Team. • Coordinated care with the full MDT so rehab sessions were timed and planned. • MDT included physiotherapists, occupational therapists, nursing, ACCP and medical staff. • Leadership, role assignment and clear communication during each rehab session. • Coordinated ward handover process required.

Conclusions

Early rehabilitation and mobilisation of the bariatric ICU patient is feasible yet significant resource is required. Further research is required into rehabilitation practices and outcomes amongst critically ill obese patients. This report hopes to provide practical guidance and solutions to promote rehabilitation of bariatric ICU patients.

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Evaluation of a new animal assisted intervention (AAI) service for an adult intensive care unit

Ruth Johnson[1]

Abstract

Background

Animal assisted intervention (AAI) is defined as an interaction between an animal and patient during a medical, nursing or therapeutic intervention (Hosey et al. 2018). It is a form of intervention that humanises patient care, reducing suffering and improving mood. It is a developing service within critical care environments and the evidence base is limited. The introduction of an AAI service to an NHS general critical care unit included evaluation of the service from the outset.

Aims

The aim is to identify if the service is safe, feasible and effective. It will provide a service benchmark and highlight areas for service development and improvement.

Method

The AAI service was provided by a registered Pets as Therapy (PAT) volunteer and their dog. After the AAI or interaction with the dog, the patient, visitor or staff member completed a specifically designed electronic questionnaire using the Survey Monkey application on an iPad. The questionnaire comprised of ten questions of mixed methods design.

Results

Quantitative and qualitative data was collected for 2 groups of responders, patients/visitors and staff. There were no responses that identified any concerns in relation to the dog's presentation, welfare, cleanliness or handling. Responders reported high levels of enjoyment and benefit from the interaction or AAI with the dog. The qualitative data was clustered into common themes, many of which were common for both groups.

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Conclusion

This study demonstrated that providing an AAI service was feasible, cost effective, without risk. It also highlighted areas for development.

Is mobilising the patient in critical care the final step: Perme ICU mobility score: A pilot study

Reema Malik[1], Armando Portables[1] and Silke Sutton[1]

Abstract

Introduction

Critical illnesses frequently result in impaired neuromuscular function and hence debilitation, commonly known as ICU acquired weakness. Respiratory functions too are compromised with long term bed rest resulting in atelectasis and lower lung volumes. Variety of scales have been used in the past but none of them are sensitive to measuring ICU mobility status over the period of ICU stay or in recognising limitations where equipment specifically related to ICU care could potentially be a barrier to progressive mobility. There is a dire need to use a scale in our unit which measures and systematise assessment of mobility status for our ICU patients and measures respiratory strength.

Aims

To use Perme mobility score as outcome tool for ICU patients in Southend Hospital and relate it with clinical application and the length of stay.

Materials and methods

From February 2019 to April 2019, a total of 61 adult patients (of which 37 patients with valid scores) were assessed in single blinded randomised control trial at ITU/HDU of Southend University Hospital. Patients were assessed by a team of 5 physiotherapists and 1 rehab assistant from the time of admission to ITU to transfer or discharge to HDU and/or ward. Mobility scores were recorded from 0–32 points using Perme ICU mobility score. The outcome tool is derived from 15 items grouped in 7 categories and score ranges from 0–32. Peak Cough Flow was also used to assess cough strength of self-ventilating patients.

Results

The average mobility scores at the time of admission were 9 and at the time of discharge were 19 on 32 points of

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Perme Mobility Score, showing increase of 31% in mobility scores. Average length of stay was 4.6 days which was moderately correlated with discharge scores *r*-value = 0.35.

Peak cough flow had limited results due to less non intubated patients.

Conclusion and significance

Patients made significant improvement in their physical functions from the time of admission to the time of discharge to the wards by showing remarkable change in the score. On the other hand Peak cough flow could not predict significant difference. Physiotherapy and early mobilisation are definite answer for early recovery of ICU patients.

Notes

Approval of all authors and physiotherapy team was taken for abstract submission. This is pilot study and Southend Hospital reserves full rights to undertake further study and audit of the same.

Physiotherapy outcome measures in critical care: Benchmarking current practice and furthering our understanding of their use

Emily Flowers[1] and Charles Reilly[1]

Abstract

Introduction

Outcome measures (OMs) are routinely used to measure the impact of physiotherapy treatment. The Chartered Society of Physiotherapy recommends '*Appropriate outcome measures are identified and implemented at assessment*' (The Chartered Society of Physiotherapy 2012). There is currently no agreed core OM within adult critical care (CC).

Aim

To benchmark OMs used by the adult CC physiotherapy team at a large London NHS Foundation Trust against other UK Trusts. To improve understanding of which OMs are used and how OMs inform physiotherapy clinical practice, within adult CC.

Methods

Over 7 months in 2019 physiotherapists were invited to complete a survey, selected or self-selected from; local networks, the South East London, Kent and Medway Major Trauma Network (SELKaM), and the Association of Chartered Physiotherapists in Respiratory Care (ACPRC). The survey contained 4 open and 6 closed questions. 24 Hospitals/trusts were contacted. Qualitative data was analysed using thematic analysis and quantitative data presented as percentages.

Results

24 responses were received. The Chelsea Critical Care Physical Assessment Tool (CPAx) was most frequently used (92%). OMs were completed on initial assessment (88%), weekly (71%), and CC step-down (67%). OMs were frequently used; to support projects (70%), in follow-up clinic (43%), and to provide patient feedback (35%). A key theme identified was the value of OMs providing feedback

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on patient progress to the CC MDT. Barriers to OM completion included time pressure and staffing levels.

Conclusion

The CPAx was most frequently used. OMs were generally measured on initial assessment, weekly and CC step-down, which is comparable to current practice at our NHS Foundation Trust. There is diversity in the clinical utility of OMs. In-depth qualitative interviews and focus groups are required to understand the implementation of OMs and agree core OMs within adult CC physiotherapy practice in the UK.

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Service evaluation of a post intensive care unit exercise class

Clair Martin[1], Eleanor Douglas[1], Sonja Bradshaw[1], Laura Mills[1] and Theresa Harvey-Dunstan[1]

Abstract

Introduction

Survivors of critical illness that required an intensive care unit (ICU) stay face long-term physical, cognitive, psychosocial and emotional impairments. Completing an outpatient rehabilitation class may improve outcomes. Funding to deliver an exercise class for survivors was awarded from a charity service improvement fund.

Aim

To investigate if an exercise class improved outcomes in physical function, anxiety and depression and quality of life for critical illness survivors.

Methods

Survivors who stayed in ICU ≥4 days and who were able to travel to the class independently were invited to attend. The exercise class took place one hour a week for 6 weeks. Exercise was individualised for patients based on their baseline 6 minute walk test and included a combination of aerobic and resistive exercise. Exercise prescription was reviewed weekly by the physiotherapist to aid progression. Class attendees were given opportunities to discuss their health concerns with the therapists and peers.

Results

16 survivors completed the class prior to the first COVID-19 lockdown. Service evaluation methods will compare baseline and 6 week outcomes for physical function, quality of life, anxiety and depression. Data will be presented on patient demographics; pre and post class outcomes using descriptive statistics and examine the minimally clinical important differences where relevant.

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Conclusions

The findings from this service evaluation will be used to develop the service further and inform the application for a research grant to explore the impact on critical illness survivors and their caregivers of attending the class.

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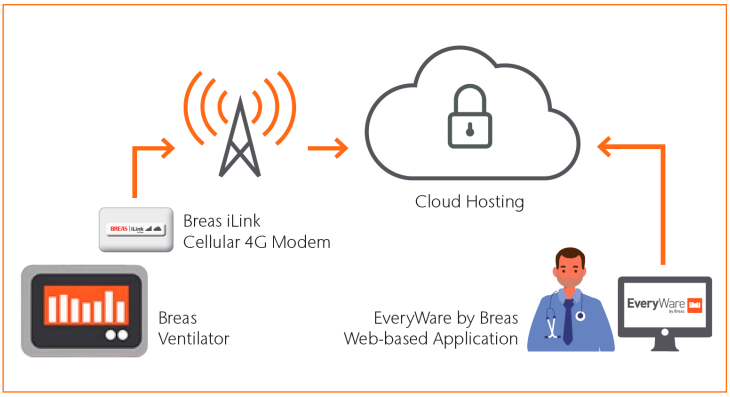

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The experiences of a physiotherapy led extubation checklist protocol for mechanically intubated patients with SARS-CoV-2 in a UK adult intensive care unit – A case series

Andrew Hall[1] and Laura Breach[1]

Abstract

Introduction

Early in the coronavirus pandemic numerous cases of increased laryngeal oedema following extubation resulting in re-intubation were reported. As extubation failure leads to increased risks of infection and mortality, premature extubation and re-intubation should be avoided. As a result, a conservative approach to primary extubation of COVID-19 patients was suggested. An extubation checklist was designed by medical colleagues in an attempt to increase chances of successful extubation. This checklist was disseminated to physiotherapy staff working on adult intensive care to lead the process.

Aims and objectives

To ascertain whether a physiotherapy led extubation checklist could predict and assist with successful extubation of mechanically ventilated patients with SARS-CoV-2.

Methods

Patients included were admitted to an Adult Intensive Care Unit with SARS-CoV-2 virus requiring mechanical ventilation in an NHS cardiothoracic Intensive Care Unit from March–July 2020, where the checklist was implemented by the physiotherapist prior to extubation. Findings were presented to the consultant at ward round and a decision regarding extubation was made.

Results

Physiotherapists completed the checklist with seven patients; 5 successfully extubated, one received a tracheostomy and one was excluded as the full data were not available.

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Table 1: Results

	ABCDE section	SBT	Cuff leak test	Successful extubation
Patient 1	No concerns	No concerns	>110ml	Yes
Patient 2	No concerns	No concerns	>110ml	Yes
Patient 3 *Attempt 1*	Extreme agitation on sedation hold therefore extubation delayed	N/A	>110ml	No
Patient 3 *Attempt 2*	Mild agitation but easily settled	No concerns	>110ml when settled <110ml when agitated/coughing	Yes
Patient 4	ASB > 5	No concerns	Completed by consultant who reported >110ml	Yes
Patient 5 *Attempt 1*	Extreme agitation on sedation hold therefore extubation delayed	N/A	N/A	No
Patient 5 *Attempt 2*	No concerns	No concerns	<110ml therefore extubation delayed 24 hours	Yes
Patient 6	Extreme agitation noted on sedation hold and PaO_2 6 therefore extubation delayed	N/A	N/A	No, tracheostomy required

Conclusion

An extubation checklist designed specifically for COVID-19 patients and implemented by physiotherapists was able to successfully predict and facilitate the extubation of five patients. This suggests that physiotherapists are suitable in leading this process to predict and facilitate successful extubation, and could utilise these skills more widely in the future.

The patient's, family members and carers' perspective of the barriers of, and facilitators to, early mobilisation for ICU-Delirium: A qualitative study protocol

Jacqueline Bennion[1], Roger Garrett[2], Stephanie K. Mansell[1], Duncan Barron[3], Christopher Manning[4], Daniel Martin[5], Gill Mein[4]

Abstract

Short study title/acronym

BAFTA-ICU: The patient's, family members and carers perspective of the Barriers And FaciliTAtors of locomotion for a Delirium population in the Intensive Care Unit.

Background

One third of patients develop delirium following intensive care unit (ICU) admission. ICU-delirium is associated with poor patient outcomes including long-term disability and high mortality. Early mobilisation contributes towards the prevention and reduction of ICU-delirium. However, the implementation of early mobilisation is infrequent.

Aims

To explore the key participant's experience of the barriers to, and facilitators of, early mobilisation in the adult ICU specific to a delirium population.

Methods and analysis

Three moderators will carry out up to 6 focus groups including up to 5 participants in each group. Focus group discussions will be utilised to explore the experiences of patients, carers and family members using Microsoft Teams. Participants will be recruited using a purposive sampling technique from the ICUSteps Charity. Discussions will be audio-recorded and simultaneously transcribed verbatim utilising the otter.ai program. Framework analysis using a thematic methodology will identify themes in the data.

Ethics

This study received a favourable ethical approval from St. George's University Research Ethics Committee (reference number: 2021.0019).

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Patient and public involvement (PPI)

A previous ICU patient and member of the public has co-produced this protocol and will be involved as a member of the research team at each stage of the research process. A public advisory group will be consulted throughout the research process.

Acknowledgements

None.

Conflicts of interest

None.

The variance in practice of ventilator hyperinflation amongst UK physiotherapists

Rebecca Storer[1]

Abstract

Background

Hyperinflation is used by physiotherapists in the management of mechanically ventilated patients.

Ventilator hyperinflation (VHI) is an emergent treatment technique. Ventilator settings are adapted to deliver a larger than tidal breath to the patient. The effect is to increase lung volume, reduce lung collapse and aid secretion clearance.

The variation of this practice amongst physiotherapists is unknown.

Aims

To explore the variation in practice of VHI amongst physiotherapists working with mechanically ventilated adults in the UK.

Method

29 participants completed an online survey regarding practice of VHI investigating:

- Frequency.
- Indications.
- Contraindications.
- Settings.
- Training.

2 semi-structured interviews were completed.

Results

VHI

41% of participants use VHI.

Amongst the users of VHI Consensus was demonstrated regarding indications for its use being sputum retention and reduced lung volumes (88% and 82% respectively).

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There was less consensus amongst participants regarding, settings, and execution of its use (Table 1).

Table 1: Responses regarding settings

Pressures used	40cm H_2O	35cm H_20	30cm H_20	**Inspiratory time**	1.5–3 secs	3–5 secs	>5 secs	**Cycles of treatment**	3–4
Response rate	68%	22%	9%		20%	53%	0%		100%

Interviewee's thought VHI education should be a postgraduate focus.

Reasons for non-use were cited as lack of training and poor evidence base.

Conclusion

Practice of VHI amongst UK physiotherapists is varied.

This study highlights aspects of VHI that are commonly used amongst clinicians. This can support local guidelines.

However, variation in practice regarding settings and technique demonstrates the need for further investigations to ensure safe and effective practice.

Postgraduate education, such as common competency frameworks could reduce the variance within practice.

The use of a tilt table in patients with short term extracorporeal mechanical circulatory support: A case series

Zoë C Paterson[1], Sarah Hunt[2] and Laura McGarrigle[1]

Abstract

Introduction

Patients requiring short term extracorporeal mechanical circulatory support (MCS) for cardiogenic shock often experience intensive care unit (ICU) acquired weakness due to an extensive inpatient stay. The benefits of tilt table rehabilitation in ICU are thought to be early weight bearing, improved global strength, reduction of muscle atrophy, contracture prevention and increased tidal volumes. The feasibility and safety of tilt table use in patients receiving short term MCS has not previously been described.

Aims and objectives

We aimed to describe the feasibility of using a tilt table for rehabilitation during MCS whilst documenting safety measures and evaluating any adverse events.

Methods

A retrospective documentation review was conducted of patients who participated in rehabilitation with a tilt table during a period of MCS between 2018 and 2020. Details gathered included; type and cannulation of MCS, rehabilitation completed on the tilt table and any adverse events.

Results

After completion of a written bedside risk assessment, a tilt table was used with 6 patients on 11 occasions see Table 1. 5 individuals were able to progress the time/degrees tolerated. There were no adverse events relating to cannula placement or flow disturbance. All participants were ultimately able to progress to active standing and ambulation.

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Table 1: Patient demographics

Age	Gender	Indication for MCS support	MCS type	Cannulation sites	Indication for tilt table use	Tilt table activities	Clinical outcome
16	Male	Cardiogenic shock	Biventricular assist device	Subcostal	CVA	Neck and upper limb exercises	Bridged to recovery – explanted. *Discharged home*
19	Female	Right ventricular failure post heart transplant	Right ventricular assist device	Subcostal	CVA	Limb exercises, social activities	Bridged to recovery – explanted. *Repatriated to local hospital for neurological rehabilitation*
19	Female	Cardiogenic shock	Biventricular assist device	Subcostal	Gastrocnemius shortening	Upper limb stretches	Bridged to recovery – explanted. Repatriation to local hospital for further rehabilitation. *Discharged home*
34	Female	Cardiogenic shock	Biventricular assist device	Subcostal	Psychological engagement	Upper and lower limb exercises	Bridged to recovery – explanted. *Discharged home*
53	Female	Right ventricular failure post heart transplant	Right ventricular assist device	Femoral and subcostal	Bowel management system and Stevens-Johnson syndrome	Upper limb exercises, calf stretches	Bridged to recovery – explanted. *Discharged home*
59	Male	Heart failure post acute anterolateral STEMI	Biventricular assist device	Subcostal	Critical illness myopathy	Limb exercises, thoracic expansion exercises	Palliation *RIP*

Conclusions

We have shown that by implementing a risk assessment, and following a standardised procedure, tilt table rehabilitation in individuals with MCS is feasible, well tolerated and safe. With a multidisciplinary team approach, it can enhance the early rehabilitation of dependent ICU patients, assisting with progression of weight bearing time, standing ability and ultimately ambulation.

Camden's COPD and home oxygen remote pulmonary rehab

Helen O'Regan[1] and Caitlin Smyth[1]

Abstract

Introduction

Pulmonary rehab is a fundamental treatment pillar to those living with COPD (Chronic obstructive pulmonary disease).

Aim

To provide an adapted Pulmonary Rehab service safely during the COVID-19 pandemic.

Methods

- A literature review completed on the evidence supporting remote health services delivered to patients.
- A comparative review of current technology applications and services available to people living with COPD.
- A Stand operating Procedure (SoP) was compiled including a service risk assessment.
- Remote pulmonary rehab (RPR) classes (exercise and education) began in July with a standing class cohort. This transition to a rolling programme and a seated level class.
- We looked to widen our patient accessibility by obtaining a bank of Amazon tablet devices from CNWL to provide to patients would like to participate in RPR without a technology device.
- Identified the need for further technology support, thus devised a technology support pathway to refer patients with any issues.
- YouTube channel with classes (seated and standing levels) and education session available to patients.
- Created a discharge pathway from RPR to an online exercise class facilitated by YMCA.
- The team aims to operate online RPR and face-to-face PR simultaneously to promote patient choice.

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Results

RPR is successfully running offering patients with COPD an alternative PR programme, with excellent patient feedback. Data collection is going underway to compare the efficacy of RPR to traditional PR.

Conclusion

RPR is an alternative method to conventional PR given the current circumstances to patients and health providers.

Comparison of virtual pulmonary rehabilitation platform outcomes in a regional network

Alex Round[1], Ellie Wells[1], Jo Congleton[1] and Julia Bott[1]

Abstract

Introduction

During the first COVID-19 pandemic lockdown, PR (pulmonary rehabilitation) clinicians in our regional PR Clinical Network started using virtual platforms.

Aim

To establish acceptance to completion rates of all virtual PR platforms (VPRPs) used, both digital and paper-based, and regional average clinical outcomes.

Method

An e-survey was undertaken of VPRPs between 1 March 2020–7 August 2020. Analysis included aggregation of individual PR services' data. Number of patients per platform accepting and completing was summed, and acceptance to completion rates calculated.

Results

Data are available on 13 of 15 providers (Figure 1), of the 869 patients accepting at least one virtual platform, 443 completed (51%), with virtual live classes (VLC) and British Lung Foundation (BLF) *Stay Active, Stay Well* videos having the highest completion rates (71%, 70%), reaching the national QI priority 70% target, exceeding the 2020 NACAP report for average completion (69.3%).

All providers used the 1-minute sit-to-stand test (1-MSTST) of exercise tolerance; 2 providers used an additional test. 53% of completing patients met the MCID for any exercise test; however, no provider used a practice 1-MSTST. 68% of completed patients met the MCID for at least one health status measure, exceeding the national average (58%) in the 2020 NACAP report of standard PR.

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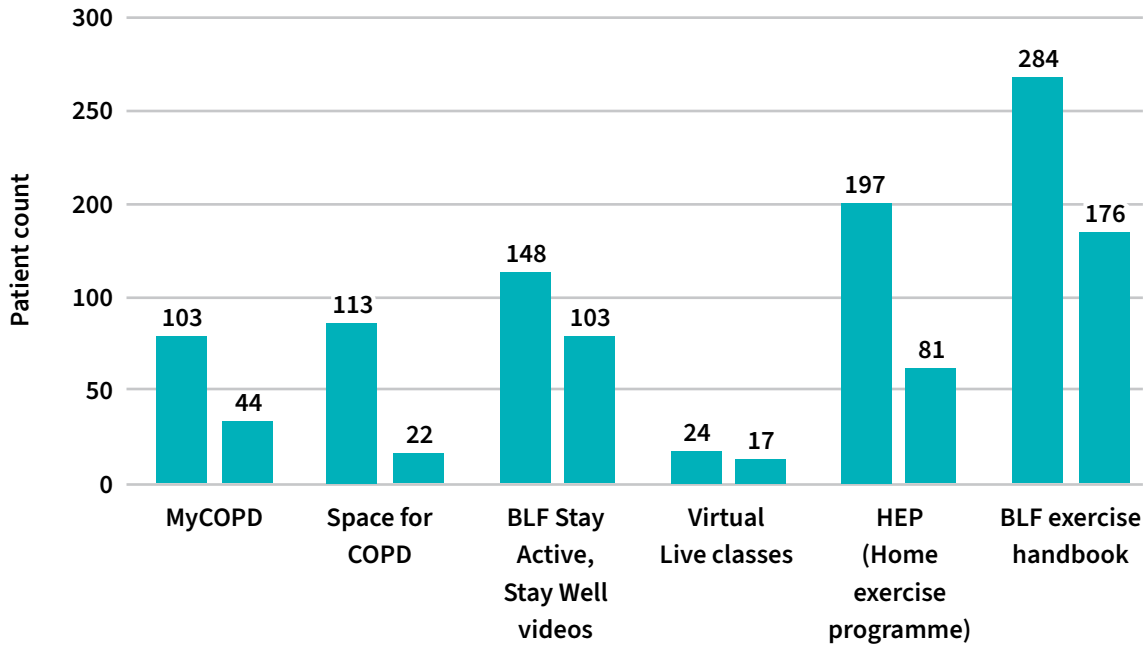

Figure 1: Acceptance to completion rates for each virtual PR platform

Conclusion

On average, digital and paper-based platforms had similar completion rates (48%, 53%), though rates varied greatly between individual platforms. Average MCID attainment for completers was high for health status. Further data collection and analysis are required to understand virtual 1-MSTST performance, and the different VPRP performances in clinical outcomes.

Cough syncope: Have we found the tipping point?

Anja Hudson[1], Orna McGinley[1], Holly Patterson[2] and Lizzie Grillo[1]

Abstract

Introduction

Cough syncope is a brief episode of reduced consciousness precipitated by diminished cerebral perfusion from cough induced hypotension. Physiological mechanisms of cough syncope are well known but it's management remains unclear. Reviewing the literature, there is no evidence examining the use of non-pharmacological interventions to facilitate airway clearance in the syncopal patient.

This case study describes the challenges of sputum clearance for a patient with unmanaged cough syncope during an acute infective exacerbation. Our patient fits the typical demographic: middle-aged, overweight, male with obstructive lung disease.

Case description

A 66 year old male was referred to a Tertiary Centre for assessment of asthma. He presented with central wheeze, exertional hypoxia, sputum retention and cough syncope and admitted for further testing. During his admission he developed a hospital acquired pneumonia requiring NIV and antibiotics.

Increased sputum exacerbated his cough leading to frequent syncopal events and subsequent peri-arrests. Interventions to assess and manage his syncope were limited by cough sensitivity and body habitus. Head-down 'tipping' during airway clearance reduced syncopal symptoms promoting an effective cough. Controlling his syncope facilitated therapeutic interventions addressing his laryngeal hypersensitivity and disordered breathing pattern, empowering him to independently manage on discharge.

Discussion and conclusion

Cough is essential for effective airway clearance. Although infrequent, syncopal symptoms inhibiting cough strength have devastating consequences particularly during acute exacerbations. There is a clear clinical need for alternative

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therapy and utilising positional 'tipping' could minimise such syncopal symptoms; however, more studies are needed to assess the efficacy with a wider population.

Does prolonged mask use result in latent breathing dysfunction? A scoping review

Claire Peters[1] and Elaine Willmore[1]

Abstract

Introduction

During the first wave of the COVID-19 pandemic anecdotal evidence from staff within Gloucestershire Hospitals NHS Foundation Trust (GHNHSFT) suggested that following prolonged use of protective masks they had noticed alterations to their breathing pattern. This could occur during or following the cessation of mask use and was particularly noticeable when performing exercise.

Aims

It was proposed that a scoping exercise be undertaken to establish whether these were isolated incidents experienced by a limited number of staff or symptomatic of a wider problem.

Methods

Local trust research and development approval was obtained.

A staff questionnaire aimed at identifying altered breathing patterns was developed. An information sheet and consent form were used alongside the survey.

Inclusion criteria

Staff working across critical care, physiotherapy and occupational therapy teams.

Exclusion criteria

Recent positive COVID-19 test.

Sample

A convenience sample of 60 staff were invited to take part.

Results

51 out of 60 (85%) response rate.

100% of responders identified the prolonged use of masks was a change in usual practice.

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35 out of 44 (80%) of responders described changes to their breathing pattern which they described as unpleasant.

17 out of 44 (39%) of staff reported these changes were noticeable following cessation of mask use and 11 out of 44 (25%) of staff felt their ability to exercise was impacted.

Conclusions

This review demonstrated that staff self-reported noticeable changes in their breathing patterns both during and after mask use. Guidance on how to normalise breathing patterns has been developed to support affected staff.

Effectiveness of telephone monitored home exercise for patients with COPD

Lisa Pritchard[1], Charlene Goh[1], Lynn McDonnell[1], Lauren Hogg[1] and Laura Moth[1]

Abstract

Introduction

Pulmonary rehabilitation (PR) is highly effective but has poor national uptake. Due to COVID-19, PR services shifted to remote interventions, opening up potential alternative options for patients post-pandemic.

Aim

To evaluate the safety and effectiveness of home exercise with weekly telephone follow-up in patients with COPD (chronic obstructive pulmonary disease).

Methods

Patients referred for PR were remotely assessed between June and December 2020. Appropriate patients chose either online exercise classes or an individualised exercise programme to complete thrice weekly with weekly telephone support for 7 weeks. Adverse events were recorded. 1-minute sit-to-stand (STS), COPD assessment test (CAT), and MRC were completed pre- and post-course. Changes in outcomes are reported as mean (± *SD*). Paired *t*-tests assessed within subject change.

Results

113 patients (90%) enrolled in the telephone intervention (age 66 ± 11 years, 55% male, FEV_1% predicted 59 ± 23%), of which 58 (51%) participated in seven calls and were reassessed. Mean change was: STS 2.4 ± 6.1 repetitions ($p = 0.002$), CAT -4.2 ± 5.8 ($p < 0.001$) and MRC -0.4 ± 0.8 ($p = 0.001$). No adverse events were reported.

Conclusion

Telephone monitored unsupervised exercise appears safe and effective in patients with stable COPD with improvements in exercise capacity, health status and breathlessness. A clinically significant improvement was seen in CAT

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with statistically significant improvements in CAT, STS and MRC. The improvement in STS and MRC did not reach the MCID established for PR but this intervention was not PR per se and MRC is insensitive to change. This intervention may offer an alternative option for future patients and improve access to exercise based treatments.

77% of COPD patients experience flare-ups, leading to hospitalisation[1]

AerobiKA*

Oscillating Positive
Expiratory Pressure Device

Reduce Exacerbations[2]

Improve Lung Ventilation[3]

Enhance Quality of Life[3]

Among **COPD** patients
with chronic bronchitis

Breathe Better

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UK AB 087 0621 | Date of preparation June 2021 adapted from MD 122A 1120

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Establishing the relationship between admission DECAF scores and prolonged hospital length of stay

George Reeves[1], Geraldine Owen[1], Rachael Colclough[1], Caron Nicholls[1], Sharon Rees[1], Sue Porter[1], Rebecca Wagstaff[1] and Kate Breese[1]

Abstract

Introduction

Prior to commencing a COPD (chronic obstructive pulmonary disease) early supported discharge (ESD) service at the Queen Elizabeth Hospital Birmingham (QEHB) in February 2020, a retrospective cohort study was needed to establish service requirements.

Methods

Participant Selection

Participants admitted to QEHB were selected based on completed COPD discharge bundle or coding indicating a COPD exacerbation; equal to patients inputted to the NACAP audit.

Data collection

A specialist respiratory nurse or physiotherapist completed admission DECAF (The Dyspnea, Eosinopenia, Consolidation, Acidemia and Atrial Fibrillation) scores for patients admitted in August 2019. Electronic medical notes were screened retrospectively to calculate hospital LOS and reason for prolonged admission. Data including BMI, FEV_1/FVC ratio, admission pH, acute NIV, MRC score and mortality were collected for patients with prolonged LOS only.

Results

82 patients were included in the study. Reasons for prolonged hospital LOS included: awaiting social services, acute or domiciliary NIV requirements, need for therapies, oxygen weaning (+/- LTOT), awaiting off-site rehabilitation bed and slow nebuliser wean.

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Table 1: Table 1 results

DECAF score	Number of patients	Mean hospital LOS (days)	95% CI (*SD*)	6-month mortality rate post discharge
0	17	4.24	+/- 2.02 (4.25)	0
1	33	7	+/- 1.61 (4.72)	0
2	18	8.6	+/- 4.35 (5.61)	0
3	7	10	+/- 4.42 (4.53)	2 (28.6%)
4	6	11	+/- 7.96. (9.94)	1 (16.6%)

Note: There were no patients with DECAF scores of 5 or 6 in this study

Conclusion

Strong relationships between higher admission DECAF scores and average hospital LOS were shown, with higher DECAF scores correlating with higher 6-month mortality post-discharge. DECAF 0–1 had prolonged admissions due to on-going medical management and slow nebuliser weans; potentially supporting an ESD service in lower risk patients. DECAF 2 admissions had prolonged LOS due to extended NIV/Domiciliary NIV and new LTOT requirements; often due to receiving sub-optimal community management of undiagnosed COPD. DECAF 3–4 admissions had prolonged LOS due to complex social requirements and off site rehab needs, suggesting they would not benefit from ESD.

Evaluating the impacts of the change from clinic to home spirometry on clinicians and adults with cystic fibrosis

Jane Metcalfe[1], Beth Budden[1], Kath France[2], Kristeen Hasney[2], Katy Lee[2], Nicola Robson[2] and Tracey Daniels[1,2]

Abstract

Background

During the first wave of the COVID-19 pandemic, face-to-face cystic fibrosis (CF) clinics were limited. Adults with CF were provided with NuvoAir spirometers to record lung function at home in order to support virtual clinics.

Aims

To evaluate how this change impacted on time and efficiency for both adults with CF and clinicians.

Methods

An online questionnaire was sent to adults with CF and a separate questionnaire was sent to clinicians at the York Hull Adult CF Centre. Mock scenarios established differences in time taken for home and clinic spirometry.

Results

28 of 70 adults with CF and 8 of 15 clinicians completed the questionnaires. Figure 1 shows the benefits of home and clinic spirometry as reported by adults with CF. When describing feelings about home spirometry, words such as *quick* and *convenient* were frequently used. When describing clinic spirometry, words such as *expertise*, and *helpful* featured (Figure 2). 62.5% of clinicians either agreed or strongly agreed that the change led to increased time efficiency. Figure 3 shows that the timed scenarios indicate that home spirometry is more time efficient.

Conclusions

- Home spirometry saved time and increased efficiency for adults with CF and clinicians.
- Adults with CF reported the main benefit of clinic spirometry was regular contact with clinicians.
- Technology plays an important role in the care of adults with CF however underlying relationships are valued and important.

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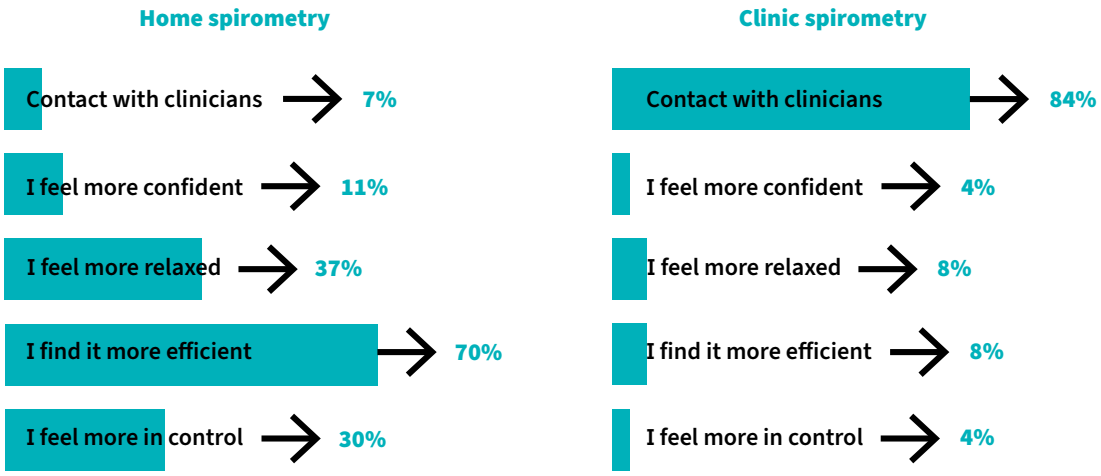

Figure 1: **The reported benefits of spirometry by adults with CF**

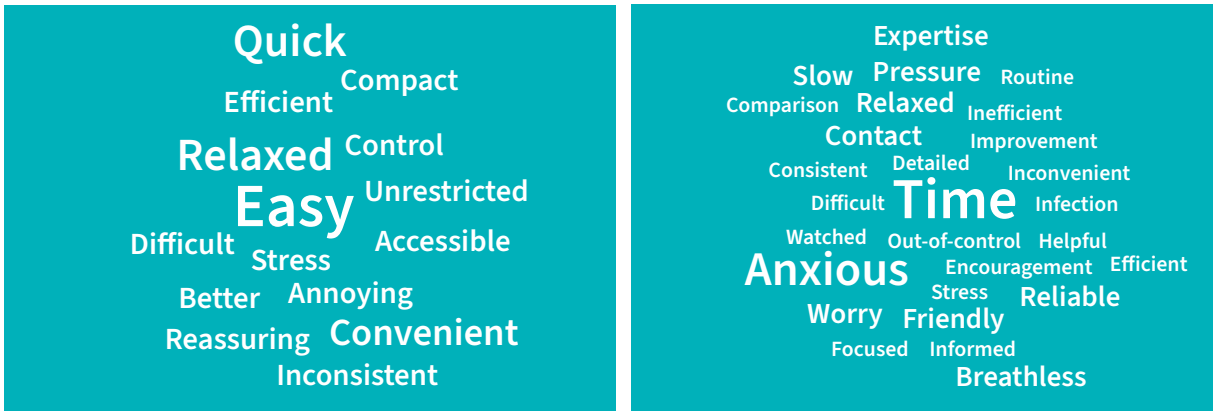

Figure 2: **Adults with CF reported feelings about spirometry**

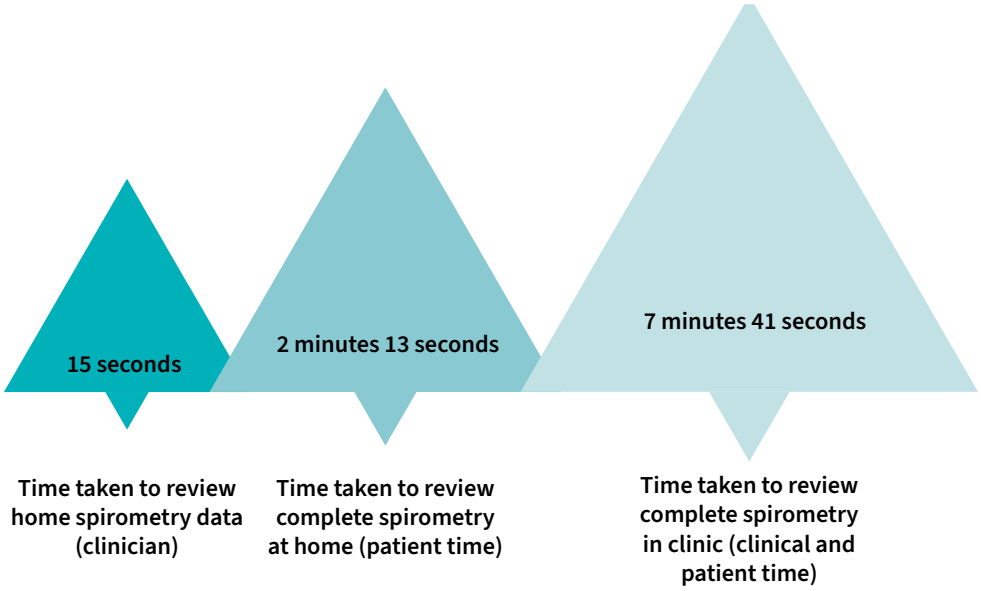

Figure 3: **The differences in timings between home and clinic spirometry for adults with CF and clinicians**

Implementation of mechanical insufflation-exsufflation (MI-E) in the community for patients with cystic fibrosis (PwCF): A service evaluation

Charlotte Hardaker[1], Amy Smith[1], Ashley Tugwell[1], Ema Swingwood[1,2] and The Bristol Adult Cystic Fibrosis Team (BACFC)

Abstract

Introduction

During Coronavirus (COVID-19) PwCF were identified as high risk and were advised by the UK Government to self-isolate at home for 12 weeks, from 22nd March 2020.

Within BACFC, positive pressure is frequently used as part of airway clearance regimes, including intermittent positive pressure breathing (IPPB) and MI-E. We have found these to aid airway clearance, reduce work of breathing and facilitate admission avoidance.

Aims and objectives

To ascertain feasibility of implementing MI-E devices at home for PwCF during the shielding period in order to optimise airway clearance.

Methods

Funding was obtained to purchase MI-E devices (NIPPY Clearway, Breas).

PwCF were identified for a device through the following inclusion:

- Forced expiratory volume in one second (FEV_1) of ≤40%.
- >4 admissions annually.
- Have used IPPB/MI-E during an exacerbation.

A survey was disseminated to patients to evaluate experiences.

Results

A total of 10 of 13 survey responses were received. Results showed PwCF found MI-E easy to use and implement at home and with a perceived increase in ease of clearance

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with minimal change in treatment burden and fatigue. Anecdotally we experienced no emergency admissions during this time period due to exacerbations and no safety concerns.

Conclusions

The implementation of community MI-E was effective and positively received by PwCF. This enabled PwCF to remain safely shielding at home with optimised airway clearance. Further ongoing work is required.

Pain and its effect on the patient journey through pulmonary rehabilitation, a local quality improvement project

Zoe Kennedy[1], Brendan De Luca[1], Laura Moth[1], Lydia Hinkins[1], Rachel Spurway[1], Gina Gardener[1] and Adam Lound[1]

Abstract

Introduction

Despite the known benefits of pulmonary rehabilitation (PR) for patients with chronic lung conditions, a significant proportion fail to complete. Chronic pain has a reported prevalence of 34–81% (Chen et al. 2015) in COPD patients and is a common reason for non-completion of PR. Local service evaluation over an eight-month period identified pain as the primary reason for PR non-completion, 21% ($n = 7$) of all patient drop-outs.

Aim

Reduce the percentage of PR drop-outs due to pain from 21% to 10% over a ten-month period.

Method

Semi-structured telephone interviews were held with ($n = 2$) patients who took part in PR whilst suffering from chronic pain, and ($n = 1$) who had declined PR due to pain. Themes uncovered informed development of a driver diagram (Figure 1) which identified areas for change in current service provision toward improved experience of PR for these patients. An action plan was then developed.

Re-evaluation of the drop-out rate secondary to pain was conducted after ten months.

Results

Re-evaluation of drop-out rate revealed a decrease in pain-related drop-outs from 21.2% to 9.5%.

Conclusions

Prior evaluation revealed a high local drop-out rate due to pain. Implementation of strategies relating to assessment, pain optimisation and exercise adaptations resulted in reduction in pain-related drop-outs.

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This small-scale project highlights the need for PR services to consider the impact of pain on completion, and develop services to improve patient experience for this cohort. Further analysis is required to assess the efficacy of PR on exercise capacity and health status in this patient group.

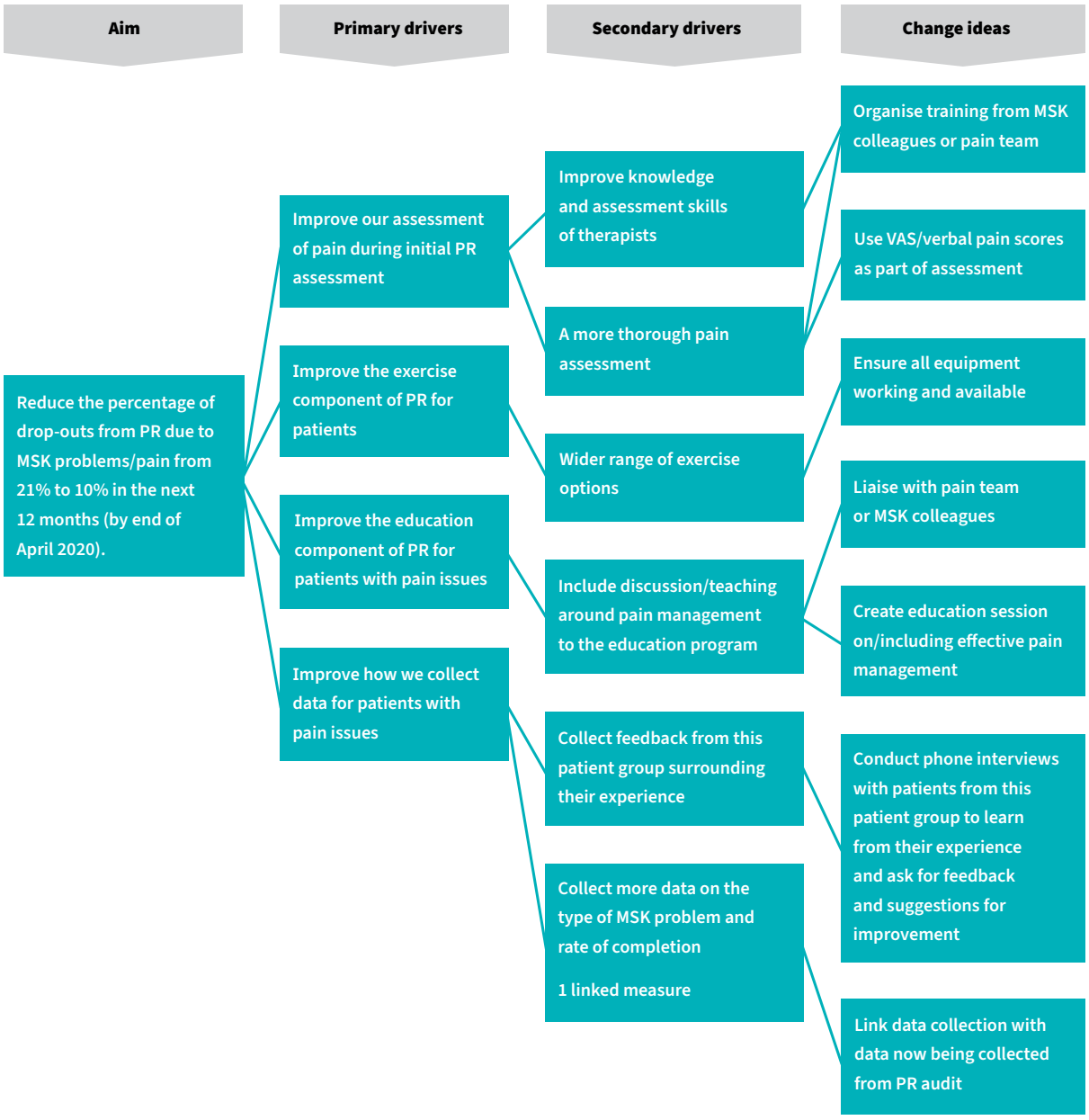

Figure 1: Driver diagram

The effect of self-management education on health-related quality of life, healthcare utilisation and inhaler technique in community-dwelling individuals with COPD: A pilot randomised controlled trial

Josephine Harrison[1], Laura Matheson[1], Sophie Robinson[1] and Mandy Jones[1]

Abstract

Background

Inhaler technique and health-related quality of life (HRQoL) amongst individuals with chronic obstructive pulmonary disease (COPD) is historically poor. Additionally, Health-care Utilisation (HU) and costs remains disproportionately high. Pulmonary Rehabilitation is usually offered however participation is low, therefore an alternative option should be available. One option is a self-management education package.

Objective

Current literature shows that self-management education can improve health outcomes in those with COPD, however these are often clinically unrealistic due to time restraints. This study aims to assess whether a shorter 30-minute educational session can illicit similar improvements.

Design

Pilot randomised controlled trial.

Methods

Six community-dwelling individuals with COPD attending a Breathe Easy Support Group (Westminster, UK) participated in this study. Participants were randomly allocated to a control (n = 3) or intervention (n = 3) group and the effect of the self-management education evaluated after 1-month. The intervention session included COPD pathology, medication importance, and inhaler technique and correction. All participants were assessed for measurements of metered dose inhaler (MDI) technique (9-step checklist), quality of life (St. George's Respiratory

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Questionnaire), lung function (FEV_1%), dyspnea (mMRC dyspnea scale). Follow-up measurements were taken remotely. Results between and within groups were analysed using SPSS software.

Results

No significant difference was found between groups HRQoL nor HU one-month post-intervention.

Conclusion

This study showed that the educational session had no beneficial effect on HRQoL or HU in community-dwelling individuals with COPD. Some improvements were seen in inhaler technique. Limitations to this study include small sample size and unforeseen circumstances, therefore the validity of these results is compromised, and results cannot be generalised. Due to these limitations, a more robust study is warranted.

Understanding self-management behaviours within the context of pulmonary rehabilitation for patients with chronic obstructive lung disease (COPD) using the Behaviour Change Wheel

Frances Butler[1,2], Katherine Baker[1], Lisa Robinson[3] and Pamela Dawson[4]

Abstract

Background

Pulmonary rehabilitation (PR) is associated with positive improvements in functional status, but benefits diminish over time (BTS 2013). Behaviour change is the cornerstone to successful self-management. Michie et al. (2011) developed a framework for understanding behaviours; The Behaviour Change Wheel. The Capability, Opportunity, Motivation, Behaviour (COM-B) model sits at the centre of this framework.

Aim

To determine key components associated with behaviour change in self-management in PR.

Methods

Focus groups were carried out with a purposive sample of individuals who had recently completed PR (2 groups, $n = 4$), Healthcare Professionals (2 groups, $n = 8$) and Members of the Breathe Easy support group (2 groups, $n = 8$) to determine behavioural factors influencing uptake and adherence to self-management in PR. A survey was sent to UK respiratory Physiotherapists in 2018 to determine their views on barriers and facilitators associated with self-management and behaviour change. 32 participants responded.

Themes were mapped using the COM-B model.

Results

Table 1 shows the combined data mapped to the COM-B model.

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Common themes from the focus group and survey data include:

- Environmental context and influence to change.
- Psychological and emotional readiness to change.
- Physical ability to change.

These alongside the key components mapped to the COM categories form the basis of a structured approach to support for self-management.

Table 1: Data mapped to COM-B model

Behaviour	Capability	Opportunity	Motivation
Self-management	*Physical:* • Skills. • Tools. • Strength/fitness. • Physical limitations. • Exacerbations. • Disease severity. • Breathlessness. *Psychological:* • Knowledge. • Information/advice. • Education. • Cognitive awareness. • Anxiety/depression. • Embarrassment. • Confidence.	*Physical:* • Time. • Transport to a PR venue. • Work commitments. • Dependants, carer responsibilities. *Social:* • Socioeconomic background. • Buddy/peer support. • Expert patient. • Friendship.	*Reflective:* • Goal setting. • Self-efficacy. • Adherence. • Compliance. • Empowered. *Automatic:* • Fear. • Anxiety/depression. • Enjoyment.

Conclusions

Understanding the components of behavioural relationships between Healthcare Professionals and patients is an essential step towards understanding the barriers to behaviour change in the context of self-management within PR.

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Implementing a paediatric physiotherapy surgical screening pathway

Sarah Sargent[1], Kathryn Sharp[1] and Barry Johnstone[1]

Abstract

Background

Historically, physiotherapy post-surgery was a reactive service, relying on referrals from the surgical team at the Royal Hospital for Children, Glasgow. A proactive screening pathway could improve outcomes for patients and timely access to physiotherapy assessment.

Aim

The aim of this project was to implement a physiotherapy surgical screening pathway to ascertain if proactive physiotherapy input could reduce hospital length of stay (LOS_{mean}) and number of physiotherapy reviews required.

Methods

A retrospective audit of post op surgical referrals and physiotherapy intervention was carried out April–July 2019 (A1) to obtain baseline data on LOS_{mean} and physiotherapy reviews. High risk surgical procedures deemed to carry increased risk of post-op pulmonary complications were identified through expert opinion. A screening proforma was developed including surgical procedure and underlying conditions that might impact respiratory health. The pathway was implemented in August 2019. Theatre lists were screened daily to identify post-op day one patients who fitted the criteria for physiotherapy review. Following a series of tests of change to refine the process a follow up audit was completed from August–October 2020 (A2) to compare outcomes.

LOS_{mean} and number of physiotherapy reviews were compared between A1 and A2 using descriptive statistics.

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Results

During A2 74 high risk patients were identified through screening. LOS_{mean} (days) for A2 was 3.87 compared to 6.67 during A1. Mean number of physiotherapy reviews was 2.34 in A2 compared to 5.45 in A1.

Conclusion

The physiotherapy surgical screening pathway provided an equitable and accessible service for surgical paediatrics, resulting in reduced LOS and number of physiotherapy reviews.

Ready, Steady, Go! (RSG): Creating an active environment and ethos within a paediatric hospital: Audit outcomes

Rachel Thomas[1], Jess Hilliard[1], Zoe Pulford[1], Neil Mingaud[1], Leah Robinson[1] and Sioned Davies[1]

Abstract

Introduction

There are physical activity guidelines for children which we perceived are under achieved within the hospital. A pilot of RSG was undertaken aiming to improve activity levels in the hospital and at home.

Aims and objectives

- Will RSG improve the ethos towards activity within the hospital?
- Does RSG increase/maintain children's activity whilst in hospital?
- To capture parents and staff's understanding of activity.

Methods

Families and staff completed cross-sectional surveys every 6 months. Numerical data was collected every 6 weeks through an observational audit.

Results

- 25 out of 50 of ward staff felt confident promoting activity on the ward.
- 29 out of 53 patients meet the national guidance of exercise at home. This is reduced to 5 out of 54 whilst in hospital.
- 87% of parents thought RSG would be appropriate for their child.
- Barriers to activity on wards were lack of opportunity, attachments, perception of exercise, lack of engagement from children and parents and time constraints for staff.
- RSG has overcome some of these barriers and has resulted in children dressed, and out of bed rather than in bed.

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Conclusion

The audit highlighted barriers to children's activity in hospital. RSG is an ongoing project to change the ethos within the hospital. The pilot facilitated greater engagement on a trust wide level, which in turn will help improve the quality of care we deliver to our children.

The barriers to expectorating sputum in children with cystic fibrosis

Elizabeth White[1], Ruth Fishwick[1], Zoe Rushton[1] and Francis J Gilchrist[2]

Abstract

Objectives

Sputum is the gold standard microbiology sample for the diagnosis of lower airway infection in cystic fibrosis (CF). Alternatives are less reliable (cough swabs), time consuming (induced sputum) or invasive (bronchoscopy samples). Expectoration of sputum is also vital for effective airway clearance. Unfortunately many children are unwilling or unable to expectorate sputum. We wanted to understand the barrier to sputum expectoration and identify interventions to overcome them.

Method

We created a 17 point questionnaire (BOSS: Barriers of Spitting Sputum) covering the educational, mechanical, psychological and resource related barriers to sputum expectoration. Children >6 years attending the CF clinic at RSUH were asked to complete the questionnaire. A physiotherapist analysed each questionnaire and created a personalised plan to address the barriers identified by each child.

Results

43 children completed the questionnaire. 10 (23%) always expectorated sputum, 29 (68%) sometimes expectorated and sometimes swallowed and 4 (9%) never expectorated. Children in all 3 groups reported single or multiple barriers to expectoration. The most commonly identified barriers were; nausea/vomiting, embarrassment/worried about others opinions, thick sputum/sputum getting stuck. Emotional barriers were addressed by CF psychologist and the other issues by the CF physiotherapy team.

Conclusion

The BOSS questionnaire has enabled us to identify the barrier to sputum expectoration in children with CF which we

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have attempted to address. We now plan to repeat the questionnaire to see if this process has increased the percentage of children who are willing to expectorate sputum.

Are wind instrument musicians at a greater risk of developing a chest infection when compared to the general UK population?

Holly Drover[1], Eleanor Douglas[1,2], Kirsty Hyndes[2] and Theresa Harvey-Dunstan[2]

Abstract

Introduction

Bacteria and viruses cause chest infections (CI). Evidence suggests a presence of bacteria in wind instruments (Marshall & Levy 2011), however little is known of this impact. Furthermore, there is no research investigating wind musicians' instrument hygiene or knowledge of standardised instrument cleaning guidelines.

Aims and objectives

The aim of this study was to investigate the incidence of CI's and knowledge of its symptoms. Secondary aims were to explore the practice of instrument hygiene.

Methods

Members from a university orchestra were recruited to an undergraduate study. A bespoke questionnaire was created, and a pilot conducted to ensure applicability. 54 surveys were completed and analysed for descriptive and thematic analysis. Incidence of CI (per 1,000) was compared to that of a general UK population (McFarlane et al. 2001).

Results

52 subjects (age 20 ± 1 years, 54% female, asthma diagnosis in 23%) were included. There was an incidence of 62 CI per 1,000 people per year. 48% (n = 25) cleaned their instruments after each play and 58% (n = 30) had never been taught methods of cleaning. 39% (n = 20) identified that they may be at an increased risk of developing a CI and 2% (n = 1) were able to correctly identify all symptoms stated in the questionnaire.

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Conclusion

There was an increased incidence of CI's when compared to the general UK population. A majority reported inadequate instrument hygiene and knowledge of CI symptoms. Standardised cleaning guidelines would therefore be beneficial. Further investigation on a larger scale would build on these initial findings.

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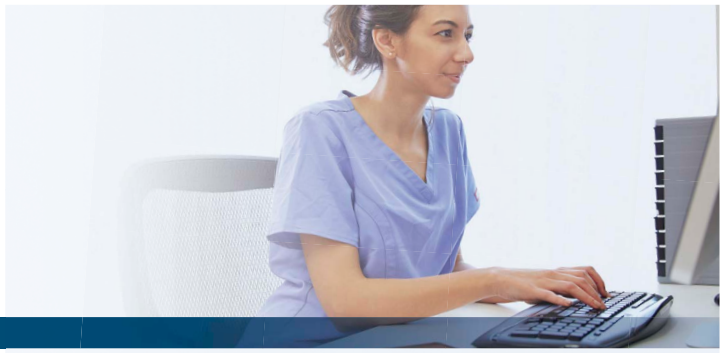

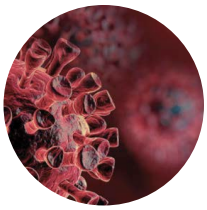

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Fisher & Paykel HEALTHCARE

The physical impact of a personalised 4-week programme on a patient with a total artificial heart

Susan Hutchison[1], Charlotte Pereira[1], Vicky Gerovasili[1] and Andre Simon[1]

Abstract

Purpose

To determine the effectiveness of an individualised exercise programme on patients with a total artificial heart (TAH).

Methods

A 39-year-old male underwent a 4-week bespoke rehabilitation programme following a 7-month hospital stay post implantation of a TAH. On discharge he was not physically well enough for transplant listing. Baseline physical assessment tests were performed including; respiratory function test (RFT) with maximal inspiratory pressure (MIP). A 6-minute-walk-test (6MWT), short physical performance battery (SPPB) and timed 36 stair climb.

A home exercise programme consisting of cardiovascular (CV) and strength training exercises with a progressive walking programme was prescribed. Inspiratory muscle training (IMT) was implemented. A disordered breathing pattern specialist physiotherapist reviewed his breathing pattern and prescribed specific breathing exercises to focus on diaphragmatic breathing.

Weekly telephone consultations allowed monitoring and continuous progression of the exercise programme. MIP's were retested and IMT progressed as able. The patient was reassessed after 4-weeks.

Results

The patient's results on assessment pre and post interventions are shown in Table 1. The patient subjectively reported to be able to walk further before feeling breathless, including on slopes. The number of repetitions achieved, and resistance used for exercise increased. After a 4-week period of exercise, the patient performed better in all objective tests.

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Table 1: Outcome measures pre and post intervention

	At initial testing	After 4 weeks of intervention	Improvement (%)
RFT			
FVC (l)	1.1	1.52	38
FVC (% pred)	29	42	13
FEV_1 (l)	0.76	1.05	38
FEV_1 (% pred)	23	34	11
MIP (kpa)	8.3	8.87	7
IMT			
Resistance (cmH_2O)	50	64	28
6MWT			
Distance (m)	300	320	7
Recovery (min)	01:48	00:44	70
Borg	4	3.5	
SPPB			
Balance	4	4	–
4m gait (sec)	03.94	03.15	20
5x STS (sec)	08.12	06.00	26
Timed stair climb			
Time (sec)	35.44	29.53	17
Borg	3	1	

RFT: respiratory function test; FVC: Forced vital capacity; FEV_1, Forced expiratory volume in one second; MIP: maximal inspiratory pressure; 6MWT: six minute walk test; Borg, Modified Borg dyspnoea scale; SPPB: short physical performance battery; STS: sit to stand

Conclusion

A 4-week home exercise programme consisting of progressive walking, CV and strength exercises, IMT and breathing re-education exercises resulted in a TAH patient improving on all outcomes to a point where he was suitable for transplant listing. All TAH patients should undergo individualised rehabilitation.

Does simulation based on-call training improve self-evaluated confidence for physiotherapy staff undertaking on-call duties

Bettina Lotay[1], Alex Hodson[1], Vaughan Root[1] and Louise Koslicki[1]

Abstract

Introduction

Inpatient physiotherapists are on the respiratory emergency on-call rota. Responding to emergency situations causes high levels of stress/anxiety and staff lacking in confidence. In 2019/2020 Royal Berkshire NHS Trust introduced simulation based training for on-call staff aiming to enhance confidence when responding to referrals.

Aim

To evaluate effectiveness of SIM training on perceived on-call confidence.

Methodology

SIM sessions included 6 participants and 2 facilitators in the control hub of the SIM-3G mannequin. Scenarios were completed in pairs. Participants were called on their mobile phone, as per real-life, and provided a brief handover.

The SIM programme consisted of five scenarios. Participants were prompted to discuss their assessment, problem list and treatment plan, then carry out their treatment. Skills included positive pressure therapies, manual techniques, suction, oxygen therapy and airway management.

Following each scenario the participants and facilitators debriefed to discuss assessment finding and analyse treatment management.

Self-reported confidence about managing on-call situations was assessed pre and post SIM training using a five-point Likert scale.

Results

Data was collected ($n = 26$) from January to December 2020.

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Table 1: Self-reported confidence about managing on-call situations assessed pre and post SIM training

Self-reported confidence pre-SIM training					
	Not Confident at all	Not so Confident	Somewhat Confident	Very Confident	Extremely Confident
n	3	8	10	4	1
%	11.5	30.8	38.5	15.4	3.8

Self-reported confidence post SIM training					
	Not Confident at all	Not so Confident	Somewhat Confident	Very Confident	Extremely Confident
n	0	0	9	15	2
%	0	0	34.6	57.7	7.7

Participant's perception of feeling 'very confident' increased by 42% following SIM. Average rating was 8.6/10 for how helpful participants found SIM training. Using Mann-Whitney U test, conveying the confidence scale as 1–5, $p = 0.00005$ suggesting this data demonstrates statistical significance.

Conclusion

This small scale study suggests simulation based training has a good impact on improving self-perceived confidence for physiotherapists undertaking on-call duties. Further research is required in this field to prove efficacy or support a formal model to carry out simulation based training.

Simulation-based education for on-call respiratory physiotherapists: A survey of experiences from a UK teaching hospital

Fiona Howroyd[1] and Tammy Lea[1]

Abstract

Introduction

Physiotherapists are commonly required to undertake on-call respiratory duties yet many find this stressful and report lack of confidence (Reeve 2003; Mansell at al. 2019). Simulation based education (SBE) is a recommended training tool to improve confidence in real-life clinical scenarios (Reeve 2003; Gough et al. 2013).

Aims

To evaluate the experiences and opinions of chartered physiotherapists who participated in respiratory on-call training including SBE.

Methods

All on-call physiotherapists who participated in SBE training at a UK teaching hospital were invited to participate. An anonymous survey was designed to evaluate experiences of SBE.

Results

52 physiotherapists were invited to participate. Questionnaires were returned by 23% of physiotherapists (n = 12). 66% (n = 8) reported no previous experience of SBE. Prior to SBE, more than 50% reported feeling anxious, nervous or pressured. 75% reported SBE as a *very useful* training tool yet all preferred a combination of training methods. All physiotherapists felt SBE helped them prepare for on-call; 60% found SBE very helpful and 40% moderately.

Conclusions

The results suggest that SBE is a useful training tool for on-call physiotherapists. However, as return rates were low, results may not be generalisable to wider groups. Further research is required to ensure optimal training for on-call physiotherapists.

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Utilisation of patient participation and involvement to develop a meaningful educational programme for post COVID-19 rehabilitation

Laura Moth[1], Hannah Cumming[1], Lynn McDonnell[1], Ellie Williams[1] and Lauren Hogg[1]

Abstract

Introduction

Introduction COVID-19 can result in persistent symptoms beyond resolution of acute illness. Rehabilitation courses known to be effective in respiratory or cardiac disease may aid recovery. The optimal content is unknown for this novel disease.

Aim

To use patient participation and involvement (PPI) to guide development of education for a post COVID-19 rehabilitation course.

Method

Proposed educational content was discussed in two focus groups at the course outset using semi-structured interview. Data was analysed by two independent reviewers and themed. All participants had been hospitalised with COVID-19 within the preceding 7 months and had persistent symptoms.

Results

All patients ($n = 10$) commented positively on the proposed content. 4 themes were identified as being particularly important to participants; psychological support for the patient, psychological support for family and carers; benefits advice; return to work. Alterations were made to the course content accordingly.

Conclusions

Addressing psychological symptoms, both for patients and close family, experienced post COVID-19 was consistently identified as an important educational component. Occupational and benefit support should also be considered for this population. Utilising PPI was valuable for developing

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meaningful educational content and highlights the need for a multidisciplinary approach in delivering COVID-19 rehabilitation.

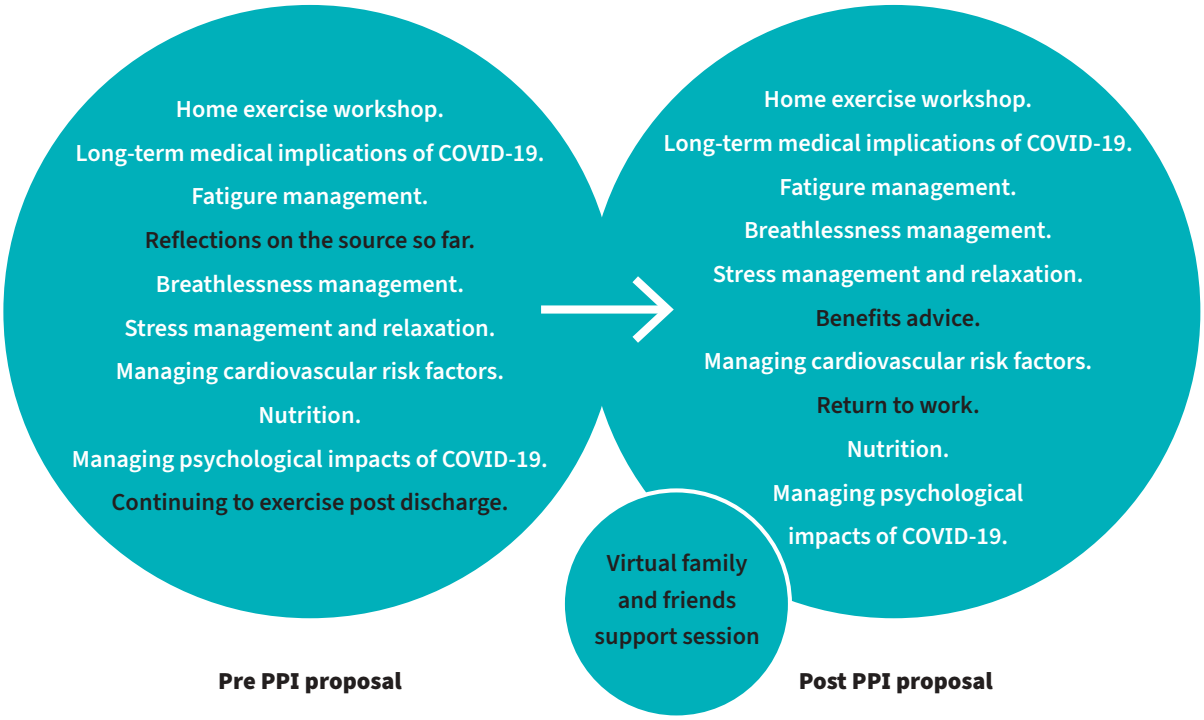

Figure 1: Educational plan pre and post PPI. Black text sessions in the left green circle represent removed sessions, black text sessions in the right green circle represent those added in response to PPI

What factors influence United Kingdom physiotherapists to specialise in cardiorespiratory physiotherapy?

Agnieszka Lewko[1], Jason Hong[2] and William McKale[2]

Abstract

Introduction and background

It is unclear what influenced physiotherapists to specialise in cardiorespiratory physiotherapy (CRP).

Aims and objectives

The aims of the study were to:

1 Indicate the factors that influenced physiotherapists to specialise in CRP.
2 Explore what influenced their speciality choice in practice.

Methods

A cross-sectional online survey included a mix of 5-point Likert scale, yes/no and open-ended questions. The survey was distributed via social media using LimeSurvey. UK-based physiotherapists were included. The study was approved by the St George's, University of London REC (reference: 2020.0069). Descriptive statistics were used to present findings. Open-ended questions responses were analysed using thematic analysis.

Results

86 CRP were included. The majority were female (n = 71, 83%), aged 25–34 years and Band 7 (63%). 51 (59.3%) responders did not plan to specialise in CRP as a student. Top three factors which influenced *very much* their choice of speciality were: interest in CRP (n = 56, 65.1%), acute setting (n = 54, 62.8%), and knowledge of CRP (n = 37, 43%). The top factors *not at all* influencing were: a convenient location (n = 30, 34.9%), the working hours/availability (n = 29, 33.7%), and university educators/lecturers (n = 26, 30.2%). Patient care within setting (n = 38; 44.2%), interest in CRP (n = 32; 37.2%) and mentorship/role models (n = 22; 25.6%) were the most influential factors. Two core themes were positive and negative placement experience and subthemes were mentorship, enjoyment of the clinical environment and inter-professional working.

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Conclusions

Fostering interest, positive clinical environment and mentoring are some of the key factors leading to decision to specialise in CRP in UK.

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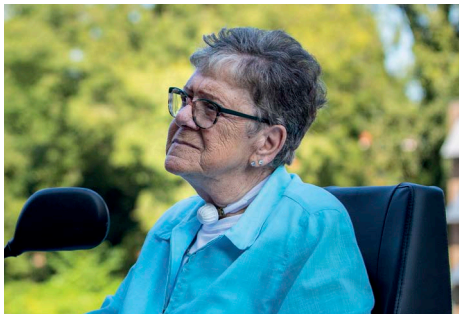

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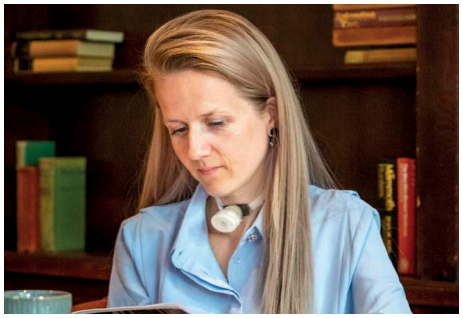

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ISSN 2059-0199 (Online)