University Hospitals Bristol NHS
NHS Foundation Trust

Rehabilitation in Critical Care

Evidence Update

May 2018
(Quarterly)

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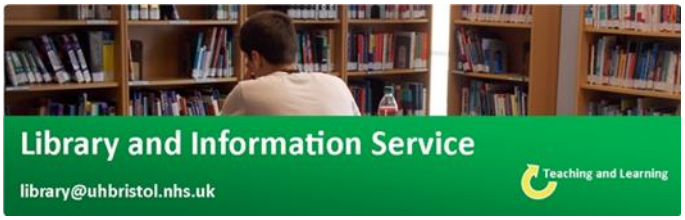

Training Calendar 2018

May (13.00-14.00)

22nd (Tue) **Critical Appraisal**

30th (Wed) **Statistics**

June (12.00-13.00)

7th (Thu) **Literature Searching**

11th (Mon) **Critical Appraisal**

20th (Wed) **Statistics**

28th (Thu) **Literature Searching**

Your Outreach Librarian – Helen Pullen

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Outreach: Your Outreach Librarian can help facilitate evidence-based practice for all in the team, as well as assisting with academic study and research. We also offer one-to-one or small group training in **literature searching, critical appraisal and medical statistics**. Get in touch: library@uhbristol.nhs.uk

Literature searching: We provide a literature searching service for any library member. For those embarking on their own research it is advisable to book some time with one of the librarians for a 1 to 1 session where we can guide you through the process of creating a well-focused literature research. Please email requests to library@uhbristol.nhs.uk

The Latest Evidence

NICE National Institute for Health and Care Excellence

Rehabilitation after critical illness in adults(QS158) September 2017

Cochrane Library

2. Early intervention (mobilization or active exercise) for critically ill adults in the intensive care unit.

Author(s): Doiron, Katherine A; Hoffmann, Tammy C; Beller, Elaine M

Source: The Cochrane database of systematic reviews; Mar 2018; vol. 3 ; p. CD010754

Publication Date: Mar 2018

Publication Type(s): Research Support, Non-u.s. Gov't Journal Article Review

PubMedID: 29582429

Available at Cochrane Database of Systematic Reviews - from Cochrane Collaboration (Wiley)

Abstract:BACKGROUNDSurvivors of critical illness often experience a multitude of problems that begin in the intensive care unit (ICU) or present and continue after discharge. These can include muscle weakness, cognitive impairments, psychological difficulties, reduced physical function such as in activities of daily living (ADLs), and decreased quality of life. Early interventions such as mobilizations or active exercise, or both, may diminish the impact of the sequelae of critical illness.OBJECTIVESTo assess the effects of early intervention (mobilization or active exercise), commenced in the ICU, provided to critically ill adults either during or after the mechanical ventilation period, compared with delayed exercise or usual care, on improving physical function or performance, muscle strength and health-related quality of life.SEARCH METHODSWe searched CENTRAL, MEDLINE, Embase and CINAHL. We searched conference proceedings, reference lists of retrieved articles, databases of trial registries and contacted experts in the field on 31 August 2017. We did not impose restrictions on language or location of publications.SELECTION CRITERIAWe included all randomized controlled trials (RCTs) or quasi-RCTs that compared early intervention (mobilization or active exercise, or both), delivered in the ICU, with delayed exercise or usual care delivered to critically ill adults either during or after the mechanical ventilation period in the ICU.DATA COLLECTION AND ANALYSISTwo researchers independently screened titles and abstracts and assessed full-text articles against the inclusion criteria of this review. We resolved any disagreement through discussion with a third review author as required. We presented data descriptively using mean differences or medians, risk ratios and 95% confidence intervals. A meta-analysis was not possible due to the heterogeneity of the included studies. We assessed the quality of evidence with GRADE.MAIN RESULTSWe included four RCTs (a total of 690 participants), in this review. Participants were adults who were mechanically ventilated in a general, medical or surgical ICU, with mean or median age in the studies ranging from 56 to 62 years. Admitting diagnoses in three of the four studies were indicative of critical illness, while participants in the fourth study had undergone cardiac surgery. Three studies included range-of-motion exercises, bed mobility activities, transfers and ambulation. The fourth study involved only upper limb exercises. Included studies were at high risk of performance bias, as they were not blinded to participants and personnel, and

two of four did not blind outcome assessors. Three of four studies reported only on those participants who completed the study, with high rates of dropout. The description of intervention type, dose, intensity and frequency in the standard care control group was poor in two of four studies.Three studies (a total of 454 participants) reported at least one measure of physical function. One study (104 participants) reported low-quality evidence of beneficial effects in the intervention group on return to independent functional status at hospital discharge (59% versus 35%, risk ratio (RR) 1.71, 95% confidence interval (CI) 1.11 to 2.64); the absolute effect is that 246 more people (95% CI 38 to 567) per 1000 would attain independent functional status when provided with early mobilization. The effects on physical functioning are uncertain for a range measures: Barthel Index scores (early mobilization: median 75 control: versus 55, low quality evidence), number of ADLs achieved at ICU (median of 3 versus 0, low quality evidence) or at hospital discharge (median of 6 versus 4, low quality evidence). The effects of early mobilization on physical function measured at ICU discharge are uncertain, as measured by the Acute Care Index of Function (ACIF) (early mobilization mean: 61.1 versus control: 55, mean difference (MD) 6.10, 95% CI -11.85 to 24.05, low quality evidence) and the Physical Function ICU Test (PFIT) score (5.6 versus 5.4, MD 0.20, 95% CI -0.98 to 1.38, low quality evidence). There is low quality evidence that early mobilization may have little or no effect on physical function measured by the Short Physical Performance Battery score at ICU discharge from one study of 184 participants (mean 1.6 in the intervention group versus 1.9 in usual care, MD -0.30, 95% CI -1.10 to 0.50), or at hospital discharge (MD 0, 95% CI -1.00 to 0.90). The fourth study, which examined postoperative cardiac surgery patients did not measure physical function as an outcome.Adverse effects were reported across the four studies but we could not combine the data. Our certainty in the risk of adverse events with either mobilization strategy is low due to the low rate of events. One study reported that in the intervention group one out of 49 participants (2%) experienced oxygen desaturation less than 80% and one of 49 (2%) had accidental dislodgement of the radial catheter. This study also found cessation of therapy due to participant instability occurred in 19 of 498 (4%) of the intervention sessions. In another study five of 101 (5%) participants in the intervention group and five of 109 (4.6%) participants in the control group had postoperative pulmonary complications deemed to be unrelated to intervention. A third study found one of 150 participants in the intervention group had an episode of asymptomatic bradycardia, but completed the exercise session. The fourth study reported no adverse events.AUTHORS' CONCLUSIONSThere is insufficient evidence on the effect of early mobilization of critically ill people in the ICU on physical function or performance, adverse events, muscle strength and health-related quality of life at this time. The four studies awaiting classification, and the three ongoing studies may alter the conclusions of the review once these results are available. We assessed that there is currently low-quality evidence for the effect of early mobilization of critically ill adults in the ICU due to small sample sizes, lack of blinding of participants and personnel, variation in the interventions and outcomes used to measure their effect and inadequate descriptions of the interventions delivered as usual care in the studies included in this Cochrane Review.

Database: Medline

Journal Tables of Contents

The most recent issues of key journals. If you would like any of the papers in full text then please email the library: library@uhbristol.nhs.uk

Critical Care Medicine

June 2018, Volume 46, Issue 6

Intensive Care Medicine

April 2018, Volume 44, Issue 4

Library Clinic

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June 6th: **Terrace (Level 4, Education Centre)** *12.00-14.00*

June 19th: **Welcome Centre, BRI** *10.00-16.00*

July 3rd: **Welcome Centre, BRI** *10.00-16.00*

July 4th: **Canteen (Level 9, BRI)** *12.00-14.00*

August 8th: **Foyer, Education Centre** *12.00-14.00*

August 29th: **Foyer, St Michael's Hospital** *12.00-14.00*

September 5th: **Canteen (Level 9, BRI)** *12.00-14.00*

September 11th: **Welcome Centre, BRI** *10.00-16.00*

October 3rd: **Terrace (Level 4, Education Centre)** *12.00-14.00*

November 7th: **Canteen (Level 9, BRI)** *12.00-14.00*

December 5th: **Foyer, Education Centre** *12.00-14.00*

December 11th: **Welcome Centre, BRI** *10.00-16.00*

Recent Database Articles

1. Long-Term Functional Outcomes after Blunt Cerebrovascular Injury: A 20-Year Experience.

Author(s): Shahan, Charles P; Stavely, Taylor C; Croce, Martin A; Fabian, Timothy C; Magnotti, Louis J

Source: The American surgeon; Apr 2018; vol. 84 (no. 4); p. 551-556

Publication Date: Apr 2018

Publication Type(s): Journal Article

PubMedID: 29712605

Available at The American surgeon - from ProQuest (Hospital Premium Collection) - NHS Version

Available at The American surgeon - from EBSCO (MEDLINE Complete)

Abstract: Since blunt cerebrovascular injury (BCVI) became increasingly recognized more than 20 years ago, significant improvements have been made in both diagnosis and treatment. Little is known regarding long-term functional outcomes in BCVI. The purpose of this study was to evaluate the impact of BCVI on those long-term outcomes. All patients with BCVI from 1996 to 2014 were identified from the trauma registry. Functional outcome was measured using the Boston University Activity Measure for Post-Acute Care. Multiple regression analysis was performed to identify potential predictors of outcomes. A total of 509 patients were identified. Overall mortality was 18 per cent (BCVI-related = 1%). Of the 415 survivors, follow-up was obtained in 77 (19%). Mean follow-up was five years, with a maximum of 19 years. Mean age and injury severity score were 47 and 25, respectively. Six (8%) patients suffered strokes. Mean Activity Measure for Post-Acute Care scores were 59 (mobility), 58 (activity), and 44 (cognitive function), each indicating significant impairment compared with normal. Multiple regression models identified 1) age as a predictor of decreased mobility, 2) injury severity score as a predictor of decreased mobility, activity, and cognitive function, and 3) stroke as a predictor of decreased activity, cognitive function, and likely mobility. Development of stroke and increased injury severity resulted in worse long-term functional outcomes after BCVI. Thus, stroke prevention with optimal diagnostic and treatment algorithms remains critical in the successful treatment of BCVI because it has significant impact on long-term functional outcomes and is the only modifiable predictor of outcomes in patients after BCVI.

Database: Medline

3. The effects of physical therapy with neuromuscular electrical stimulation in patients with septic shock: Study protocol for a randomized cross-over design.

Author(s): Lago, Alessandra Fabiane; de Oliveira, Anamaria Siriani; de Souza, Hugo Celso Dutra; da Silva, João Santana; Basile-Filho, Anibal; Gastaldi, Ada Clarice

Source: Medicine; Feb 2018; vol. 97 (no. 6); p. e9736

Publication Date: Feb 2018

Publication Type(s): Randomized Controlled Trial Journal Article

PubMedID: 29419665

Available at Medicine - from Europe PubMed Central - Open Access

Available at Medicine - from IngentaConnect - Open Access

Available at Medicine - from PubMed Central

Abstract:INTRODUCTIONSeptic shock is a potentially fatal organ dysfunction caused by an imbalance of the host response to infection. The changes in microcirculation during sepsis can be explained by

the alterations in the endothelial barrier function. Endothelial progenitor cells (EPCs) are a potential recovery index of endothelial function and it an increase in response to neuromuscular electrical stimulation (NMES) was demonstrated. Therefore, the objective of this study is to investigate the effects of NMES in patients with septic shock.METHODS AND ANALYSISIt is a study protocol for a randomized cross-over design in an intensive care unit of a tertiary University hospital. Thirty-one patients aged 18 to 65 years. The study will be divided in 2 phases: the phase one will be held in the first 72 hours of septic shock and the phase two after 3 days of first assessment. Patients will be randomly selected to the intervention protocol (decubitus position with the limbs raised and NMES) and control protocol (decubitus position with the limbs raised without NMES). After this procedure, the patients will be allocated in group 1 (intervention and control protocol) or group 2 (control and intervention protocol) with a wash-out period of 4 to 6 hours between them. The main outcome is mobilization of EPCs. The secondary outcome is metabolic and hemodynamic data. A linear mixed model will be used for analysis of dependent variables and estimated values of the mean of the differences of each effect.

Database: Medline

Defining new barriers to mobilisation in a highly active intensive care unit - have we found the ceiling? An observational study.

Brock C, Marzano V, Green M, Wang J, Neeman T, Mitchell I, Bissett B.

Heart Lung. 2018 May 7. pii: S0147-9563(18)30003-7. doi: 10.1016/j.hrtlng.2018.04.004. [Epub ahead of print]

Progressive mobility program and technology to increase the level of physical activity and its benefits in respiratory, muscular system, and functionality of ICU patients: study protocol for a randomized controlled trial.

Schujmann DS, Lunardi AC, Fu C.

Trials. 2018 May 10;19(1):274. doi: 10.1186/s13063-018-2641-4.

Early Ambulation in Patients With External Ventricular Drains: Results of a Quality Improvement Project.

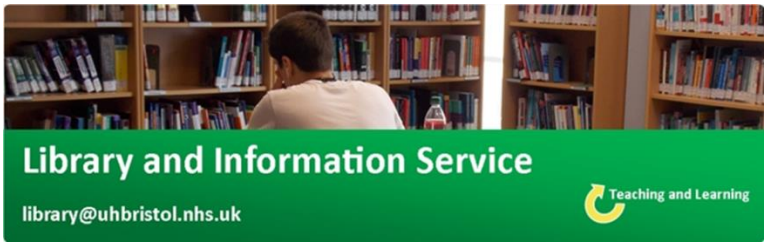
Shah SO, Kraft J, Ankam N, Bu P, Stout K, Melnyk S, Rincon F, Athar MK.

J Intensive Care Med. 2018 Jun;33(6):370-374. doi: 10.1177/0885066616677507. Epub 2016 Nov 10.

Early rehabilitation to prevent postintensive care syndrome in patients with critical illness: a systematic review and meta-analysis.

Fuke R, Hifumi T, Kondo Y, Hatakeyama J, Takei T, Yamakawa K, Inoue S, Nishida O.

BMJ Open. 2018 May 5;8(5):e019998. doi: 10.1136/bmjopen-2017-019998.



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