

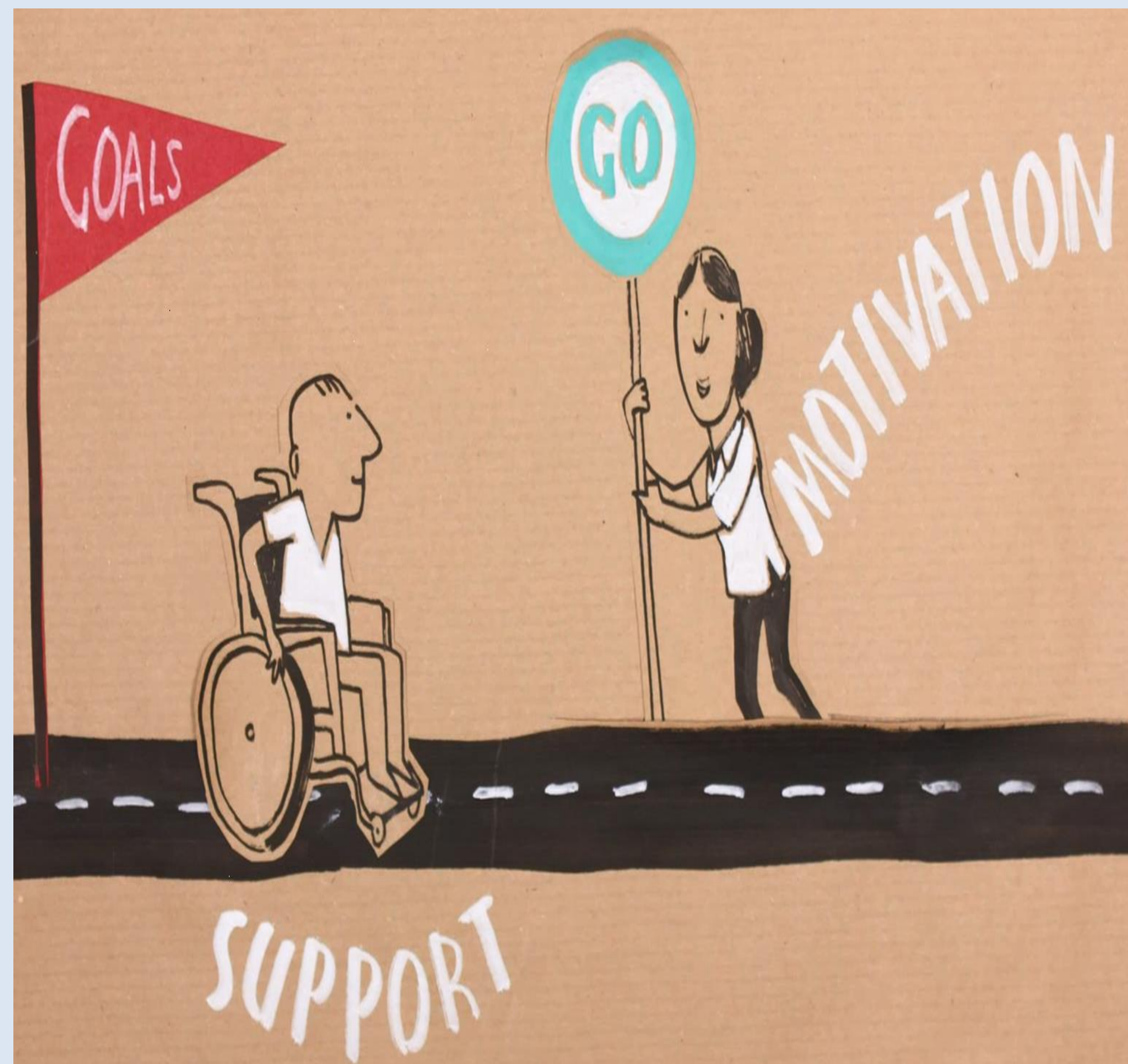
# Feasibility for the use of the Chelsea Critical Care Physical Assessment tool in a complex neurorehabilitation unit

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## BACKGROUND

Recent improvement in resuscitation and surgical techniques has led to an increased number of people surviving severe brain injuries. NHS expenditure on neurological conditions increased by 200% between 2003/4 and 2012/13 (Department of Health 2014). Early rehabilitation reduces the risk of developing preventable secondary complications, and reduces length of stay and readmission rates. Finding an outcome measure appropriate for those accessing complex rehabilitation is difficult as patients with severe disability often fall beneath the floor of many global disability measures (Turner-Stokes 1999).

The UK version of the Functional Assessment Measure (UK FIM+FAM) is the principal outcome measure for specialist rehabilitation in patients with complex disabilities (Turner-Stokes et al 2012), and reporting of scores is mandatory for all level 1 and 2 specialist rehabilitation units. However in practice many patients are not able to achieve any change from baseline in the physical domains of the UK FIM+FAM. It was proposed that the Chelsea Critical Care Physical Assessment (CPAx) measure may be appropriate and more sensitive to change in this population. It has been trialled in the rehabilitation units at the Walton Centre since 2013 and appears to be more sensitive to small changes in patients at both ends of the functional scale than the current measures, however it has not been validated outside of the critical care setting.



## AIMS

Objective: To evaluate whether the CPAx tool is a sensitive and reliable measure of physical and respiratory function in neurorehabilitation inpatients.  
Question 1 - Does the CPAx correlate with the UK FIM+FAM standard assessment tools in a predictable way?  
Question 2 - Is the CPAx more sensitive to changes in the patients' functional status compared to the UK FIM+FAM?

Ethical approval was granted by Edge Hill Research Ethics Committee and the Health Research Authority

## METHOD

**Design:** Longitudinal, non-experimental, correlational pilot study.

**Sample:** 29 patients completing their rehabilitation in the study period (May 2017-March 2018)

**Inclusion:** Non-random convenience sample of all adult patients admitted from hospital for Level 1 rehabilitation following neurological injury.

**Exclusion:** Patients admitted to the unit from the community for management of long term conditions e.g. contracture management.

**Intervention:** CPAx scored by two physiotherapists (blinded to each other's scores) on admission and repeated on discharge by the treating physiotherapist.

**Comparison:** UK FIM+FAM completed on admission and discharge. The physical functioning section is completed by a physiotherapist.

## RESULTS

- Inter rater reliability was moderate-almost perfect for all items on CPAx. Strongest elements were Lie-sit ( $\kappa=.960$ ) and Bed-chair ( $\kappa=.959$ ); weakest was cough ( $\kappa=.625$ ).
- All linked dimensions of CPAx and UK FIM+FAM show a statistically significant, moderate correlation.
  - High internal consistency between domains on CPAx and UK FIM+FAM (CPAx respiratory  $\alpha=.738$ , function  $\alpha=.935$ ; UK FIM+FAM  $\alpha=.928$ ). Floor effect found on UK FIM+FAM for 68.75% of patients on admission, 20.69% on discharge. No floor or ceiling effect seen on CPAx.
  - Larger effect size on CPAx ( $r=.59$ ) than UK FIM+FAM ( $r=.54$ )

## CONCLUSION

CPAx has been shown to be a reliable, sensitive measure in this small pilot study. It appears to be more sensitive than UK FIM+FAM and shows no floor or ceiling effect in the complex rehabilitation population

## IMPLICATIONS FOR FURTHER RESEARCH

- Further research is recommended in a larger population across Level 1 rehabilitation settings nationwide. It would be beneficial to assess whether CPAx is useful in spoke/extended rehabilitation units.
- Evaluation of CPAx throughout the rehabilitation pathway i.e. from Level 1 through to spoke and extended rehabilitation settings
- Comparisons using other domains of UK FIM+FAM (i.e. cognitive/psychosocial domains) to assess their ability to predict physical improvement on CPAx.