

Feasibility Audit of Saeboflex in Stroke patients: Impact on recovery across the patient pathway

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Background

Dynamic hand orthotics (such as SAEBOFlex) are not yet routinely used in the NHS. Treatment options are limited for patients who have moderate to severe upper limb impairment following stroke as they are unable to effectively integrate their hand consistently into functional activities (Winter J, 2011; Davenport S, 2005). According to neuroplastic principles, early intervention in upper limb rehabilitation is recommended to maximise recovery (Winter J, 2011; Davenport S, 2005).

Introduction

Arm and hand weakness as a result of stroke occurs in approximately 70% of stroke survivors (Steck, 1998; Jeon, 2012). 30%- 66% patients do not recover functional use of their upper limb (NHS Consultation Improvement paper 2010; Molier, 2011). Estimates suggest that 7.4% of community healthcare spending and 5.5% of hospital care expenditure is consumed by illness caused by stroke (NHSE 1996; Winter J, 2011). Lang *et al* (2009) found an average of 54 repetitions were completed during an average 36 minute therapy session. Animal studies suggest that 400-600 repetitions are required to demonstrate cortical changes from training effects (Nudo *et al*, 1996; Klein *et al*, 1998).

Why SAEBO?

Traditional therapies that address moderate to severe upper limb hemiparesis have not shown efficacious results (Hoffman HB, 2011; Jeon HS, 2012; Winter J, 2011). Repetitive task-specific training improves upper extremity function in individuals suffering from neurological injuries (Oujamma I, 2009; Steinberg, 1997; Kleim JA, 2008; Johansson 2000). SAEBO is suitable for patients with little hand or finger function and provides task specific training (Jeon HS, 2012; Hoffman HB, 2011; Barry, 2012), guided by, but independent of therapists.

Method

Patients fulfilling DHO inclusion criteria were assessed and treated with SAEBO Flex in the acute setting and continued along the patient pathway on discharge.

Outcomes were measured using the Fugl-Meyer upper limb assessment (FM) as it is validated for use in the Stroke population and free to use. Video analysis was also completed.

Daily use of SAEBOFlex for a minimum of 45 minutes a day using repetitive reach and grasp exercises appropriate for the patients ability prescribed and reviewed by a SAEBO trained therapist (Physiotherapist or Occupational Therapist) once a week or less once established.



Results

19 patients have been treated who meet the inclusion criteria; 5 declined to continue use for various reasons such as psychological, cosmetic, cognitive and social influences. This data was not included in graphical representation.

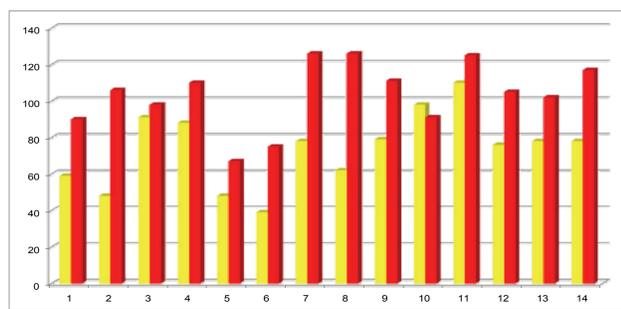
13 out of the 14 remaining patients demonstrated improvements on the FM and achieved functional goals across the treatment pathway.

1 patient developed joint pain secondary to stiffness which lowered the overall FM score however a functional improvement was observed.

6 patients have achieved near to full functional use of their arm. Length of use ranged from 2 – 24 weeks. Average length of use was 12 weeks.

Positive subjective comments have been recorded. Objective improvements include achievement of functional Activities of Daily Living goals.

Fygl Meyer Upper limb assessment Motor Function



Upper limb function pre Saebo



Upper limb function post Saebo

Discussion

The finding of this study suggest that the use of SAEBOFlex can enhance the recovery of the upper limb post stroke however the FM may not fully capture functional improvements hence additional outcome measures are being considered.

Considering the cost of individual therapy sessions and treatment adjuncts such as consultant referrals, botox, analgesia and care needs, a therapist guided SAEBOflex program appears to demonstrate a cost saving.

We are hoping to be able to differentiate between longer-term and shorter-term use of splints to enable efficient use of resources and to reduce average length of use. We will review patients 1 year post trial to review any long term functional neuroplastic changes.

Results should be interpreted cautiously due to further refinements in outcome measure use and enhancement of our patient pathway. Spontaneous recovery cannot be ruled out.

Conclusion

SAEBOFlex is proving to be a feasible and effective treatment method to improve upper limb impairment and function across the patient pathway for the moderate to severely impaired acute stroke patient.

Further studies are warranted to determine exact treatment intensity and frequency.

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