A Novel Hands-on-Tech Circuit Based Therapy for Inpatient Upper Limb Rehabilitation following Acquired Brain Injury: A Healthcare Improvement Project

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- Following a stroke up to 70% of patients experience loss of arm function leading to significant disability and reduced quality of life[1].
- There is a growing role for technology to aid delivering intensive upper limb programmes[2] however how best to implement this remains under-researched.
- Our service improvement initiative examined the feasibility and efficacy of a novel semi-supervised (1:3 paradigm) 90-minute (time scheduled) 5 times a week circuit-based "Hands-on-Tech" upper limb group for adult inpatients following stroke.

Healthcare Improvement Process

1

Notes audit + Session observations

Baseline time on task upper limb (at best):

- OT: 17 min
- PT : 3 min

2

Patient survey (Themes)

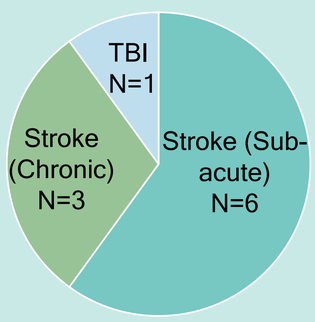
- lack of opportunity for upper limb rehabilitation outside of 1:1 OT sessions

3

- Review of evidence
- SWOT analysis
- TIDieR checklist
- Drivers diagram



Sample

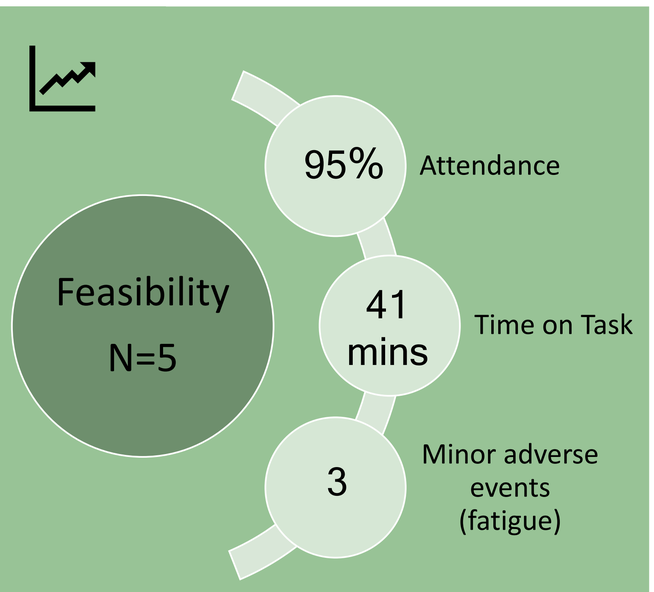


Follow 2 Stage Commands

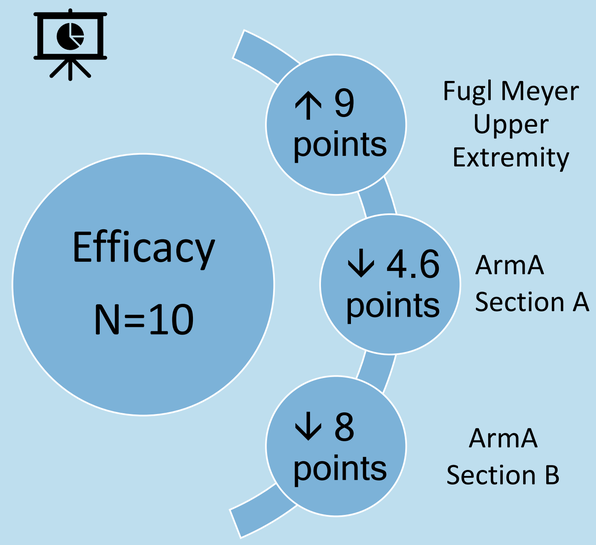
Ability to flex the shoulder and/or flickers of activity wrist/hand

Severe spasticity

Absent movement



2:3 Paradigm more consistently achieved



Arm Activity Measure (ArmA) is a patient reported 20-item measure of difficulty in passive (Section A) or active (Section B) hemiparetic arm function.

Conclusion

- Patients attending the Hands-on-Tech group increased their **upper limb practice by 240%** compared to our usual upper limb 1:1 care.
- Patients could **tolerate up to 90 minutes** of tech based upper limb circuit therapy 5 days a week.
- Patients achieved a **clinically meaningful improvement** in the ability to both care and use their arm in daily tasks[3].
- Follow-up evaluation of both the **facilitators** and **barriers** to the **1:3 paradigm** in the moderately impaired upper limb acquired brain injury population is required.

1. National Clinical Guideline for Stroke for the UK and Ireland. London: Intercollegiate Stroke Working Party; 2023 May 4.
2. Daly, J. J., McCabe, J. P., Holcomb, J., Monkiewicz, M., Gansen, J., & Pundik, S. (2019). Long-Dose Intensive Therapy Is Necessary for Strong, Clinically Significant, Upper Limb Functional Gains and Retained Gains in Severe/Moderate Chronic Stroke. Neurorehabilitation and neural repair, 33(7), 523-537.
3. Ashford S, Slade M, Nair A, Turner-Stokes L (2014) Arm Activity measure (ArmA) application for recording functional gain following focal spasticity treatment. International Journal of Therapy and Rehabilitation 21(1): 10-17.

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