The Hand Hub: Bridging the research-practice gap

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UL outcomes following stroke

Stroke is a leading cause of disability across the world
• At admission 66% of all patients have an UL paresis
• At 6 months 50% have a non-functional UL

Only 5-20% achieve complete recovery of the UL

“FOUR OUT OF FIVE PATIENTS LEAVE REHAB WITH RESTRICTED ARM FUNCTION”
Reasons for poor UL outcome following stroke:

- Priorities in rehabilitation
- Time constraints
- Compensation vs remediation

“...there still exists an urgent need for new rehabilitation and training strategies that match the specific needs of patients...”
UL Rehabilitation & Neuroplasticity

Challenging

Task specificity

Intensity

Improved outcomes

Meaningful

Repetitive
Cochrane Review (2012)
• 19 trials (666 participants)
• Improved ADLs (SMD 0.43, 95% confidence interval (CI) 0.11 to 0.75, \( P = 0.009 \), \( I^2 = 67\% \))
• Improved arm function (SMD 0.45, 95% CI 0.20 to 0.69, \( P = 0.0004 \), \( I^2 = 45\% \))
• Did not improve muscle strength (SMD 0.48, 95% CI -0.06 to 1.03, \( P = 0.08 \), \( I^2 = 79\% \))
UL Rehabilitation & Technology

- Gaming technology
- Immersive VR technology
- Robotic therapy
- Non-immersive VR technology
The Hand Hub

Launched Jan 2014. Includes:

• Gaming technology
  – Able X-Giant Mouse, Professional, Saebo ReJoyce

• Robotic therapy
  – ARMEO

• Graded workstations

• Unilateral & bilateral
The research-practice gap

EBP and the neurologically impaired UL
• Responds to challenging & intense repetition
• Emerging technology is promising
• However…. Outcomes are poor

EBP and health professionals
• Poor implementation of evidence into practice
  – Time, confidence, skills
Knowledge to Action

ACTION CYCLE (Application)

Monitor knowledge use

Select, tailor, implement interventions

Assess barriers to knowledge use

Adapt knowledge to local context

Evaluate outcomes

Sustain knowledge use

Identify problem

Identify, review, select knowledge

KNOWLEDGE CREATION

Knowledge inquiry

Synthesis

Products, tools
Hand hub knowledge creation

• Literature review
  – Advances in robotics & gaming technology
  – UL rehab requires repetition & task engagement

• RMH comparative effectiveness study
  – Battery of assessments indicate statistically significant changes
Hand hub knowledge implementation

- **Barriers**
  - Time
  - Confidence
  - Skills

- **Facilitators**
  - Key champion(s)
  - EFT (AHA 1.0)
Hand Hub evaluation

- >100 patients have used the Hand Hub
  - Group & individual
- User feedback
  - Clients
  - Clinicians
  - Key stakeholders
Summary

- Recovery of arm function after stroke is poor
- Repetition, intensity & engagement are critical for UL outcomes
- Emerging technologies provide an effective platform for improving UL function
- Allied health clinicians experience difficulties implementing evidence into practice
- The knowledge to action framework provides an effective means to address barriers to the uptake of evidence into practice
QUESTIONS?
Reference List


