SENSe Implement: Changing clinical practice in sensory rehabilitation of the arm after stroke

Leeanne Carey, Liana Cahill, Natasha Lannin and the SENSE Implement team.
Background

- Sensation is important for perception and action\(^1\)
- One in 2 stroke survivors experience sensory impairment\(^2-^3\)
- Sensory loss negatively impacts:
  - pinch grip\(^4\); hand function\(^5\); arm use\(^6\)
  - return to previous life activities\(^7\)
- Sensory loss is associated with poorer functional outcome and slower recovery\(^8,^9\)
- Sensory loss is a ‘neglected’ area of stroke rehabilitation\(^10\)
An Evidence-Practice Gap: Sensory Rehabilitation

An Australian cross-sectional study (n=172 OTs and PTs)

Research Article

Somatosensory assessment and treatment after stroke: An evidence-practice gap

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(Pumpa, Cahill, Carey 2015)
2017 guidelines under public consultation process\textsuperscript{12}

8.2 Sensation

For stroke survivors with sensory loss of the upper limb, sensory discrimination training may be provided. (de Diego et al 2013 [44]; Carey et al 2011 [46]; Doyle et al 2010 [47]).

<table>
<thead>
<tr>
<th>Recommendations: Upper Extremity Activity, Including ADLs, IADLs, Touch, and Proprioception (Continued)</th>
<th>Class</th>
<th>Level of Evidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Somatosensory retraining to improve sensory discrimination may be considered for stroke survivors with somatosensory loss.</td>
<td>IIb</td>
<td>B</td>
</tr>
</tbody>
</table>

Best practice for arm recovery post stroke: an international application\textsuperscript{\star12}

S.L. Wolf\textsuperscript{a,b,*}, G. Kwakkel\textsuperscript{c}, M. Bayley\textsuperscript{d}, M.N. McDonnell\textsuperscript{e}, for the Upper Extremity Stroke Algorithm Working Group\textsuperscript{1}
Evidence: The SENSE RCT

Research Articles

SENSe: Study of the Effectiveness of Neurorehabilitation on Sensation: A Randomized Controlled Trial

Leeanne Carey, PhD¹,², Richard Macdonell, MD³, and Thomas A. Matyas, PhD¹,²,³

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SAGE
Implementation interventions in stroke rehabilitation

- Recommend use of implementation strategies in stroke and rehabilitation\(^\text{14}\)
- Knowledge-transfer methods are available\(^\text{15}\)
- However, few rehabilitation and stroke specific interventions\(^\text{16}\)
- Multicomponent knowledge-translation interventions recommended\(^\text{17}\)
- Barriers identified in stroke\(^\text{18}\)
- Pressing need for evidence of effective application of translation models

16. Cahill et al. (in press) Implementation interventions to promote the uptake of evidence-based practices in stroke rehabilitation. Cochrane Database of Systematic Reviews.
Aims

➢ **Research Question:** Can an implementation science intervention designed to change behavior and up-skill therapists in science-based therapy change clinical practice and improve outcomes for stroke survivors?

➢ **Specific Aim:** To identify site-specific barriers and enablers to OTs’ and PTs’ use of clinical practice guidelines for rehabilitation of post-stroke upper-limb sensory loss.
Aims

1. To improve the outcomes for stroke survivors with sensory impairment
2. To develop a template for implementation of evidence-based stroke rehab

Study Design

A before and after study comparing Usual Care and SENSe intervention

Participants

1. Clinicians (OTs and PTs) *Provided with implementation strategies based on Theoretical Domains Framework*
2. Stroke survivors with sensory loss *Provided with Usual Care or SENSe Therapy by participating clinicians*

Outcome measures

Group 1 (Clinicians): *Pre- and post-implementation questionnaires, focus groups and an audit of medical histories*

Group 2 (Stroke Survivors): *The SENSe Assess tool, to evaluate upper limb somatosensory function*
Method: Knowledge-translation intervention

Development of ‘knowledge-transfer’ intervention to drive behaviour change

- targets skilled delivery of a science-based rehabilitation of the upper limb
- guided by Theoretical Domains Framework (TDF)\(^{19}\)
- translation strategies from the Behavior Change Wheel\(^{20}\)
- Normalization Process Theory to facilitate sustainability\(^{21}\)

Multi-component knowledge translation strategies

- tailoring of implementation intervention to site-specific barriers and enablers
- interactive group training workshops
- champion therapists
- provision of educational materials.
Method: Site-specific barriers and enablers

Questionnaires – based on TDF\textsuperscript{19}
- dichotomized and Likert-type scales, frequency ratings, multiple response options and open-ended written responses.

Focus group interviews
- group perspectives and themes on the implementation process, barriers and enablers, and practice change
- addressing domains such as ‘Knowledge’, ‘Skills’, ‘Social/Professional Role and Identity’, ‘Optimism’, ‘Social Influences’ and ‘Emotions’

Pre-implementation
- Baseline questionnaire & focus group

Analysis
- contingency tables, chi-square and graphical representation.
- Thematic analysis with qualitative software package NVivo10
Results: Preliminary

Recruitment commenced at 6/8 sites, 62 therapist participants recruited.

Years of experience: mean=10.00 yrs (range 1 - 30). Years of experience working with stroke clientele: mean = 7.20 yrs (range 0.5 - 30).

Emerging themes: “The Desire for Best Practice”; “The Uncertain Therapist”; “The Importance of Getting it Right”.

Responses from pre-implementation focus groups have been linked to the model at the core of the Behaviour Change Wheel, the COM-B²⁰
Therapists report knowledge and training is lacking in the assessment and treatment of somatosensation with stroke survivors:

“When I went through university….I didn’t feel I had a good grounding to even run with” – Physiotherapist

“I find that I tend to assess (somatosensation), but then I don’t know what to do with that information…. I don’t know how to retrain it” – Occupational Therapist

Organisational barriers were highlighted by therapists in addition to lack of resources:

“quite often it feels like it’s up to individual therapists to bring on change, but in order to do that, that requires a lot of….. energy and effort.” – Occupational Therapist

“I know that there is so much more that could be done..., it’s a matter of perhaps making do...I just don’t think our resources are very good” – Occupational Therapist

Improved treatment and outcomes for patients were important sources of motivation:

“It’s really good to be able to come back and say well, actually I know that I am giving you the best treatment because it has best outcomes” – Occupational Therapist

“it’s great when you get a change for a client, I love that, …. if something’s saying that change is possible that’s what motivates me” – Physiotherapist
Discussion / Conclusion

- Preliminary results provide insights into how to support desired clinical behaviours in stroke rehabilitation.

- Evidence-based strategies and frameworks are important to facilitate implementation of science-based rehabilitation.

- Implementation interventions should be tailored to site-specific barriers and enablers.

- A network of sites and ‘up-skilled’ therapists to deliver best-practice stroke rehabilitation of the upper limb.
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References

Questions